News By Teletype From 4 News Bureaus

National Petroleum News

News From Oil Industry Everywhere

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New 3d Grade Introduced in South Texas

By Telegraph

HOUSTON, Jan. 24.—The new leaded third grade gasoline has been introduced at six of its marketing points in south Texas by the Humble Oil & Refining Co. The name of the purple colored, 67 octane leaded product is "Thriftane," formed from a combination of "thrifty" and "octane."

The Humble company utilized billboards, newspaper advertising, poster boards and direct mail in anouncing the new products was to be placed on the market in San Antonio, Corpus Christi, Ingleside, Aransas Pass, Houston and Baytown.

2 Cents Below Regular

The key points made in all the advertising were that the new product must not be confused with any lower price gasoline the company has marketed in the past that it has many advantages over the ordinary third grade gasoline, and that it is not sold in competition to low price third grade motor fuel, but on a quality basis, at a retail price two cents a gallon under the price of Humble's regular motor fuel.

No other larger distributor in Texas, as far as could be learned today, has followed Humble's lead. Humble will keep a careful check on demand for the new product at these six points before making any attempt to offer it generally and other companies may accordingly await Humble's next move.

Humble is a subsidiary of Standard Oil Co. of New Jersey.

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Jersey Has No Plan For Hike in Octane

NEW YORK, Jan. 23.—Standard Oil Co. of New Jersey was reported as having no plans at present to increase the octane rating of its third grade gasoline. The Jersey company does not market third grade throughout its territory, but only where necessary to meet competition, it was pointed out.

HIGHLIGHTS OF THE NEWS

TULSA—Humble begins marketing 67-octane in South Texas. Page 5.

WASHINGTON — Producers say marketing code needed to help their branch of industry. Page 5.

TULSA—Company stands pat as refinery strike enters fifth week. Page 6.

HOUSTON — Independent refiner to barge gasoline to southeastern states. Page 6.

WASHINGTON — Coal state congressman proposes fuel oil tax. Page 7.

CLEVELAND—More than 100 'oily' bills introduced in state legislatures. Page 7.

TULSA — 'No,' says Texas' new governor on oil tax to pay pensions. Page 12.

WASHINGTON—Drop in December collections of federal 'gas' tax pulls 1938 total below 1937. Page 11.

CLEVELAND — Three big catalytic cracking units are planned. Page 13.

ST. LOUIS—Missouri jobber meeting told that transportation cost is jobber's life line. Page 14.

ALMA—Two Michigan refining companies merge. Page 13.

WASHINGTON — February 'gas' demand to be 5% higher. Page 18.

CLEVELAND — Pennsylvania crude price hiked 9-12 cents. Page 18.

WASHINGTON—ICC grants oil trucker permit covering operations in five states, despite railroads' protests. Page 15.

O'Mahoney Monopoly Probe Lumbers along in Low Gear

N. P. N. News Bureau

WASHINGTON — Now that the Temporary National Economic Committee, better known as the O'Mahoney monopoly committee, has gotten the patent testimony out of the way it is slated to delve into the insurance business, with the Securities and Exchange Commission piloting the way.

Nothing "oily" was brought out during the patent testimony —apparently, the probers are holding their fire on oil patents until the oil industry is taken up specifically.

Although the justice department's anti-trust division has been ready for some time to go ahead with its "presentation" on all phases of the oil industry, no subpoenas have been issued for oil men and no movement in that direction has come to light.

Some guessers are now saying it will be April 1 before the O'Mahoney group gets around to Oil. Indications are that it will be at least four or five weeks before the committee gets around to questioning oil men.

The uncertainty as to when the committee would take up Oil has not been confined to newspapermen covering the monopoly probers. Several of the government agencies preparing reports on oil were told to have their reports ready by mid-October last year. Several times since then they been notified that the "deadline" has been moved forward. Now, many of the reports are ready—and the TNEC has been so advised — but no move has been made to set a date for Oil's appearance before the committee.

Arkansas Advances Conservation Bill

By Telegraph

LITTLE ROCK, Ark., Jan. 23. —The second public hearing on the oil and gas conservation bill, introduced recently in the Arkansas legislature, was to be held the night of Jan. 24, by the Senate Oil and Gas committee.

Public hearing Jan. 19 resulted in suggestions for two or three relatively minor amendments but sentiment generally was reported to be favorable to the proposed measure.

A bill has been introduced, meanwhile, to increase the severance tax on oil to 7.1 per cent. The present tax is 2.6 per cent.

Code Is Seen As Remedy For Producer Ills

N. P. N. News Bureau

WASHINGTON, Jan. 23.—The special committee of the Independent Petroleum Assn. of America making a study of marketing practices believes that a set of fair trade practice rules would straighten out some of the kinks in oil marketing and that this would benefit the oil producers of the country.

So said Russell B. Brown, general counsel of the association, in commenting on the meeting of the committee here last week. The study of the committee will be part of the broad program on which the producers' association has embarked, to go outside its own division of the industry to determine where and why unsound practices prevail which affect the producers' interests.

The association feels that, while the producers have put their own house in order, they are still not benefitting from sound markets for their crude oil.

The association's marketing committee had two major aims when it met here Jan. 17 and 18, Brown said. These were, first, the promotion of some sort of code for oil marketing and, second, discussion with the Securities Exchange Commission officials of the possible advantages of requiring integrated oil companies to file separate statements for their operations in each branch of the business.

Will Support Code

"The producers are glad to lend support to the promulgation of some sort of a code," Brown said. "Whether that code should be the set of fair trade practice rules submitted to the Federal Trade Commission more than two years ago, or some other set of rules, is a part of the committee's study."

Brown pointed out that the producers feel that any disturbance in the industry, from the service station back, is reflected in the producers' situation. For that reason, the committee hopes to be able to aid the other branches of the industry in straightening out the problems that arise along the line from

the well to the service station purchaser.

While here, the committee called at the Federal Trade Commission, where they talked to Ex-Chairman Ayers, who was chairman at the time the code was submitted, and to Chairman Freer. They also visited Anti-Trust Division officials at the Department of Justice, to discuss the possibilities of a code which would not be considered "out of bounds" by this division.

At the Securities Exchange Commission they talked over the possibilities of SEC regulations for the filing of separate statements.

Brown said that, while no definite answers had been received from the government officials to whom the committee talked, all promised to consider the problems placed before them by the association.

Members of the committee are Charles F. Roeser, independent producer of Fort Worth, president of the I.P.A.A., chairman; John M. Lovejoy of New York, president of the Seaboard Oil Corp.; Paul G. Blazer of Ashland, Ky., president of the Ashland Refining Co.; Walter A. Jones of Pittsburgh, president of the Plymouth Oil Co.; B. L. Majewski of Chicago, vice president of Deep Rock Oil Corp.

District Attorneys To Confer; Topics Include Anti-Trust

WASHINGTON, Jan. 23. — Speeding up court procedure and vigilance in prosecution of anti-trust law charges will be discussed at the conference of all U. S. district attorneys called here for sometime in April by Attorney General Murphy.

Murphy, at his last press conference emphatically reiterated there would be "no let-up" in anti-trust prosecutions, indicating that this was one of the main topics on agenda of the coming conference with federal prosecutors from all over continental U. S. He said:

"The program has been vigorous so far, and my desire is to invigorate it still further. Great public good can come from proper action. The important part is to be discriminating and on sound ground."

"Bottled" Gas Meeting

NEW YORK, Jan. 24.—A tentative speaking program of diversified subjects has been arranged for the annual meeting of the Liquefied Petroleum Gas Assn., Inc., Feb. 20-22 at Oklahoma City, Okla., according to F. R. Fetherston, secretary.

Tulsa Plant Stands Pat In Fifth Week of Strike

By Teletype
N. P. N. News Bureau

TULSA, Jan. 24.—The fifth week of the strike of some Oil Workers' Union members against the Mid-Continent Petroleum Corp. was marked by resumption of sabotage, reiteration of corporation officials they will recognize only the National Labor Relations Board's decisions and the preparation of new charges to be filed with that body by the union's officials.

The sabotage, which once again took the form of dynamiting of crude oil pipelines, terminated during a period of several days during which only minor disturbances and efforts at intimidation were reported.

The declaration of the corporation's officials that the NLRB will have to make any decisions looking toward termination of the strike came as a result of the efforts of the newly appointed state board of arbitration and conciliation to bring union representatives and the corporation's representatives together for another attempt at negotiation.

Announcement that the union was preparing the new charges came from the union's International Vice President, John L. Coulter of Fort Worth, who has returned to Tulsa to confer with the local union leaders. Coulter said the new charge would involve, among other things, the dismissal of 240 striking union members without a hearing.

New Charges Prepared

There now is pending before the NLRB a complaint filed last November by the union, which corporation officials say prevents them from dealing with any other board of arbitration. Coulter was quoted as saying that complaint does not touch any of the issues involved in the present strike, and that the new charges accordingly are being prepared.

That the union has not fared so well as a result of the resistance of the Mid-Continent was intimated by Coulter in statements appearing in a local newspaper. He was quoted as saying the recent New Deal losses in the November elections and the Mid-Continent's attitude had strengthened the resistance of oil field employers who previously had agreed to sign contracts with the union.

Before the strike arose, Coulter also was quoted as saying, the union had understandings with several employers in this territory that contracts would be signed. Now, because of the strike situation and the November elections, he said, the union finds these companies are unwilling to live up to their agreements.

The comparatively peaceful situation was broken the night of Jan. 19, when an attempt was made once again to dynamite a pipeline bringing oil from the Osage county area. The blast was set off within a few feet of the location of a previous dynamiting of the line. This time, however, it was reported that the oil which had been lost when the line was broken the first time was ignited but the line was not broken.

The second pipeline dynamiting of the week, the seventh since the strike and the most serious to date was accomplished the night of Jan. 20 about six miles from Seminole, Okla. A section was torn out of the 12-inch trunk line which transports Seminole field oil to the refinery, and about 3000 barrels were lost before the break was discovered. The Seminole area has been one of the strongholds of the oil workers' union.

Restraining Order Issued

Permanent restraining orders were issued by two courts last week against the union's members who were employes of the corporation. One, issued by a district court at Ada, prohibits union members from entering any of the corporation's properties in the state, orders the return of any property taken from the company and prohibits them from interfering in any way with operation of the properties. Employes on strike, however, who live on company leases, are permitted to continue occupancy of their homes.

The unusual occurred in district court at Sapulpa, when the corporation's attorneys asked that a temporary restraining order be extended, only to have the union's attorneys plead for a permanent order, on the grounds there would not then be any possibility of the union's members being "accused" of any acts of violence, which union officials have contended right along have been caused by persons desiring to injure the cause of the strikers.

Authorities were reported last week to have been busy investigating threats made against loyal workers.

J. L. Cooper, federal labor conciliator from Washington, appeared on the scene early last week and held several conferences with both union leaders and the corporation's officials. Meanwhile, Edwin A. Elliott, regional director for the National Labor Relations Board at Fort Worth, announced he had asked resumption of negotiations between the union representatives and those of the corporation. Elliott was in Tulsa in the early days of the strike but returned to Fort Worth when negotiations were broken off Jan. 3.

Corporation officials announced early this week that a $750,000 expansion program, for which contracts have been signed, had to be postponed due to the strike. Local newspapers carried reports that some corporation official had intimated the refinery might be shut down unless the strike was settled shortly, but no direct statements on that point have been issued.

While a large crew of workmen has been kept within the refinery grounds since the strike in case of an emergency, large numbers of workmen who did live within the grounds for two or three weeks are now back to their normal routine of going to and from their homes to the plant to work.

Independent Refiner To Enter Southeast

By Telegraph

HOUSTON, Tex., Jan. 24. — Completion of a new barge terminal at Port Birmingham, Ala., and acquisition of terminaling facilities on the Atlantic seaboard were announced by Southport Petroleum Co., to facilitate distribution of its products in the southeast.

Gasoline will be barged from Southport's Texas City refinery to the new terminal which is some 400 miles upriver from Mobile, and shipped by truck and rail to Tennessee, Alabama and Georgia points.

Acquisition of the terminaling facilities on the Atlantic seaboard will enable company to distribute in eastern Georgia, North and South Carolina. Arrangements are expected to be completed within 30 or 60 days, it was said.

Southport has terminaling facilities at Brainbridge, Ga., and Avondale, La. New retail outlets are planned for New Orleans, it was said.

Coal-State Member Puts in Another Fuel Oil Tax Bill

N. P. N. News Bureau

WASHINGTON, Jan. 24. — Fuel oil continues to receive the attention of coal-state congressmen, with another tax bill to "equalize" competition between oil and coal introduced by Rep. Flannery, Pa.

Other bills affecting the oil industry introduced in Congress last week included a revised pollution-control bill by Rep. Bland, Va., several public-lands measures relating to oil and gas leasing, and a hatful of superhighway proposals.

Of interest to the coastal oil states, was the meeting of the California congressional delegation in the House to map plans for fighting the Nye Resolution to assert federal title to oil-bearing tidelands.

Rep. Lea, dean of the California delegation, was named chairman of a committee, which includes also Reps. Carter and Tolan, to seek "full and complete" hearings on the Nye proposal which was referred to the Senate Public Lands Committee. California's attorney general, Earl Warren, will be on hand for the fight, it is understood.

'Conservation Measure'

Flannery's fuel oil tax bill is the same as the measure jointly sponsored last session by him and Rep. Boland, Pa. It would tax all fuel oil used for heat or power at one cent a gallon. Last winter Boland and Flannery campaigned vigorously for the fuel oil tax, even going to the White House and urging President Roosevelt to endorse it as a measure to "conserve our diminishing petroleum reserves." But the measure was killed by a large vote.

Senator O'Mahoney, Wyo., took time off from his monopoly probing to drop in a bill "intended to encourage the employment of local capital in the production of oil and gas" in the public lands states.

"One of the principal causes of unemployment in the public land states for many years," commented O'Mahoney, "has been due to the fact that under the present system public land resources are largely dominated by concentrated eastern capital."

Companion bills to the O'Mahoney measure were introduced in the House by Rep. Dempsey, New Mexico.

President Roosevelt's hint that he might be interested in superhighways as a national defense measure has kindled the hopes of a number of congressmen who had such bills tucked away in their pigeon holes.

Rep. J. B. Snyder, Pa., author of one of the superhighway bills, spoke in behalf of the roads. In addition to the national defense angle, he dwelt on the increased transportation facilities which such roads would provide, and outlined employment benefits.

Snyder's bill, like several others before Congress (and like several that have been introduced before) calls for three east-west trans-continental highways and six north-south, border-to-border highways, all of which would require $1,000,000 annually for eight years for construction.

Bland's pollution bill is a revised version of the measure introduced earlier this session, providing for federal-state co-operation with industries to solve the stream pollution problem.

To date, no committee action has been scheduled on any bills affecting the oil industry, although setting of hearings on some proposals is looked for before long.

Michigan Oil Bill Ready

CLEVELAND, Jan. 23.—Michigan's oil and gas conservation bill will be introduced to the legislature next week.

Developed jointly by state authorities and representatives of the oil companies operating in Michigan, the measure would not restrict wildcatting, but would provide for proration in line with market demand, and would regulate drilling and well locations as anti-waste measures.

HOLC Bows to Court On 'Movable' Tanks

N. P. N. News Bureau

CLEVELAND, Jan. 25. — No appeal will be taken by counsel for Home Owners Loan Corp. from the decision of the Ashtabula County (Ohio) common pleas court's decision that lubsters, underground tanks, an air compressor and gasoline pumps installed by the supplying company at a leased station were "trade fixtures" and could be removed at the end of the lease term, according to word received by Hubert Fuller, Cleveland attorney for the oil company which was joined as a defendant in HOLC foreclosure proceedings. (See N.P.N., Jan. 11, 1939, for details of court's decision.)

'38 Output of New Ill. Fields Only 6 Days' Supply for Nation

N. P. N. News Bureau

CHICAGO, Jan. 23. — Crude oil produced from new fields found in Illinois during 1938 would supply the nation's petroleum needs for only 5.9 days, according to a recent report of the Illinois State Geological Survey.

Painting a graphic picture of the mushroom development of oil production in that state, the report shows that new fields opened up in 1938 produced 19,376,000 barrels, compared to 2,884,000 barrels from new fields found in 1937.

In contrast, output from old fields declined from 4,542,000 barrels in 1937 to an estimated 4,225,000 barrels during the year just ended. The combined production from new and old development was 23,601,000 barrels in 1938, against 7,426,000 a year ago, or approximately three times as great.

From a relatively insignificant factor in 1937, when 449 wells were completed in the state, this producing area accounted for 2541 completions in 1938, and there were 2011 new producing wells, compared to 292 in 1937.

As of Dec. 31, there were 2208 producing wells in new fields—some of these were completed late in 1937—182 dry holes had been drilled within a quarter of a mile of production, there were 63 drilling wells, 205 rigs standing, 33 wells rigging up, and 38 locations; all indicating active development in 1939.

Dismissed From Suit

WASHINGTON, Jan. 23. — Socony-Vacuum Oil Co., Inc., has been dismissed as a defendant in the case brought by a group of Mid-Continent refiners who ship their products by rail (Docket No. 28106). In its petition to the Interstate Commerce Commission the oil company pointed out that its pipeline is not a common carrier, but a plant facility, carrying products from its Augusta, Kans., refinery to storage at Topeka and Kansas City, Kans.

100 'Oily' Bills Logged by NPN

N. P. N. News Bureau

CLEVELAND, Jan. 25.—More than a hundred "oily" bills were introduced last week in the state legislatures, with Colorado still leading by virtue of 22 more bills, ranging from limitation of tank truck capacity to taxing and licensing refiners. These and other state bills are summarized in NPN's Log on Oil Legislation on pages 8 and 9.

Indiana has a bill setting up an inspector of petroleum and equipment and prescribing safety rules. The Hoosier legislators also have before them a proposal which would exempt most filling stations from the chain-store tax.

A bill in Nebraska would change the definition of "dealer" in the gasoline tax law, providing for importation and storage in tank farms. Reduced gasoline taxes are sought in several state bills.

Proceeds of the proposed 3 per cent severance tax on crude in Kansas would go to buy free school books under a bill by Sen. McDonald.

Michigan has a bill to regulate the hours of truck drivers while a proposal in Tennessee would ban commercial trucks from highways on week-ends and holidays; other states have similar bills.

Repeal of the Oklahoma port-of-entry law has been approved by the lower house of the Sooner State legislature.

A legislator in Massachusetts wants the state to regulate the installation and servicing of oil burners.

Arkansas has a high-sounding bill declaring "illegal certain monopolistic abuses practiced under the guise of copyrights by price-fixing, combinations, monopolies and pools." It is proposed to set up a state monopoly board.

Transports would be prohibited from hauling more than 20 gallons of gasoline, without payment of the gasoline tax, under an Illinois bill.

New York and other states have additional bills to defer registration dates for motor vehicle owners until well past the time when Santa Claus has depleted the family pocketbook.

Texas has a stiff truck-regulatory bill but petroleum haulers are exempted.

Gasoline tax diversion bills by the dozen have been introduced, but balancing them off have been proposed constitutional amendments proposals, like in North Carolina, to forbid diversion of highway funds.

More than 150 'Oily' Bills Dropped into Hoppers

NPN's Log
ON OIL LEGISLATION

Summarized oil legislative information below is based on reports received at Cleveland from Washington and state legislatures, which are deemed reliable although NATIONAL PETROLEUM NEWS assumes no responsibility for accuracy or completeness of this information.

Congress

Bills Introduced

US SB-814, Lundeen, Minn.
Providing for location, survey, and building of three transcontinental and six north-south highways. To Post Office and Post Roads Committee.

US SB-828, Walsh, Mass.
Permit President to construct and acquire auxiliary vessels for the Navy, such as oil tankers, etc. To Naval Affairs Committee.

US SB-878, O'Mahoney, Wyo.
To amend the act of Aug. 26, 1936. To Public Lands Committee.

US SB-879, O'Mahoney, Wyo.
To encourage the employment of local capital in mining of oil and gas on the public domain. To Public Lands Committee.

US HB-2714, Celler, N. Y.
To repeal the Miller-Tydings Act. To Judiciary Committee

US HB-2759, Youngdahl, Minn.
To repeal long-and-short haul provision of the Interstate Commerce Act. To Interstate Commerce Committee.

US HB-2767, Randolph, W. Va.
To build superhighways for "national defence." To Road Committee.

US HB-2890, Bland, Va.
Providing for federal-state cooperation in pollution control. To River and Harbors Committee. (Same as his bill, HB-1951, with minor changes to overcome reasons for President's veto of last year's pollution bill.)

US HB-2886, Flannery, Pa.
To tax fuel oil at rate of 1-cent a gallon. To Ways and Means Committee. (Same as Boland-Flannery measure of last session.)

US HB-2879, Vinson, Ga.
Declaring sales by manufacturer to selling corporation not at "arm's length" (for taxation purposes) if more than 75 jer cent of stock of either corporation is held by the other. To Ways and Means Committee.

US HB-2953, Dempsey, N. Mex.
Authorizing states owning lands in an interstate oil or gas field to include them in certain agreements (such as unit development agreements) aimed at conservation. To Public Lands Committee.

US HJ Res-115, Randolph, W. Va.
Creating a superhighways commission. To Roads Committee.

US HJ Res-116, Randolph, W. Va.
Creating a "transcontinental" Superhighways commission. To Roads Committee.

US HB-3045, Collins, Miss.
To provide for location and construction of a through superhighway system. To Roads Committee

US HB-3062, Dempsey, N. Mex.
To amend the act of Aug. 26, 1937 (same as O'Mahoney's SB-878). To Public Lands Committee.

US HB-3063, Dempsey, N. Mex.
To encourage the employment of local capital in mining of oil and gas on the public domain (same as O'Mahoney's US SB-879). To Public Lands Committee.

State Legislatures

Bills Introduced

ARIZONA

HB-70, Smith.
Amends sales tax; changes oil from one to two per cent class.

HB-80, Public Lands Committee.
Provides 5-year permits for oil and gas prospecting and 5 to 20-year leases after production brought in.

HB-81, Public Lands Committee.
Sets up method of taxing pipelines.

HB-82, Public Lands Committee.
Sets up regulations for construction and maintenance of pipelines.

HB-83, Public Lands Committee.
Provides assessment of oil and gas wells by state tax commission.

ARKANSAS

HB-33, Riales.
Provides additional 0.25 cent turnback of gasoline tax to counties. To Roads Highways Committee.

HB-94, Leflar.
Pertaining to collection of gasoline tax in counties on state lines. To Roads and Highways Committee.

HB-95, Weisenberg, et al.
Turns back to counties 0.5 cent of gasoline tax; one-half of which to go to municipalities. To Roads and Highways Committee.

SB-56, Higginbotham.
Declaring illegal certain monopolistic abuses practiced under the guise of copyrights by price fixing, combinations, monopolies, and pools; Creates state monopoly board.

SB-60, Sampier.
Fixing tax on sale of motor fuel in zones within six miles from state borders. To Revenue and Taxation Committee.

SB-75, Higginbotham.
Licensing of retail stores to provide revenue for schools and pensions. To Public Charities Committee.

SB-95, Taylor.
Levying a two per cent retail sales tax.

HB-183, Launius.
Regulate motor vehicles on highways. To Roads and Highway Committee.

CALIFORNIA

HB-115, Atkinson.
Relating to the bonding of motor fuel distributors. To Motor Vehicle Committee.

HB-352, Biggar.
Increases state gasoline tax from 3 to 4 cents. To Motor Vehicle Committee.

HB-764, Burns.
Requires trucks to have rear bumpers. To Motor Vehicle Committee.

CONNECTICUT

HB-144, Grossman.
Vehicles shall not carry more than one tank of 35 gallons of gasoline, except where licensed to carry explosives. To Motor Vehicle Committee.

SB-1020, McCarthy.
Repeals statute concerning deductions of gasoline tax by distributors.

SB-1030, Murphy.
Licenses chain stores. To Judiciary Committee.

HB-1085, Johnson.
Providing for uniform size of gasoline price signs. To Motor Vehicle Committee.

CCH-10102, Pastore.
Relating to the size of gasoline tanks of interstate trucks and buses. To Motor Vehicle Committee.

HB-1088, Field.
Reduces gasoline tax from 3 to 2 cents per gallon. To Motor Vehicle Committee.

HB-571, Alcorn.
Provides size of price signs for sale of gasoline. License fee of $20 for each distributor; omits from exemption gasoline transferred from one distributor to another. To Motor Vehicle Committee.

HB-574, Alcorn.
Prohibits adulteration of motor fuel. To Motor Vehicle Committee.

HB-553, Alcorn.
Repeals section of law concerning testing of oil. To Judiciary Committee.

COLORADO

HB-233, Carlson.
Act relating to the regulation of ports of entry. To Fees and Salaries Committee.

HB-236, Carlson.
Relating to motor fuel sold for use other than on highways. To Roads and Bridges Committee.

HB-237, Carlson.
Relating to motor fuels and imposing a tax thereon. To Roads and Bridges Committee.

HB-334, Chrysler, et al.
Licenses chain stores.

HB-335, Hamil.
Relating to a tax upon retail sales.

HB-336, Chrysler, et al.
Graduated ownership tax on motor and other vehicles. To Roads and Bridges Committee.

HB-351, Boggs.
Provides procedure for assessment and collection of store licenses and fees. To Finance Ways and Means Committee.

HB-597, Douglas.
Prohibits transportation of any inflammable liquid, including crude oil, in other than certain types of vehicles or in quantities of more than 2000 gallons. To Roads and Bridges Committee.

SB-64-65, Swisher.
Relating to a tax on motor fuel.

SB-88, McDonald.
Limits truck drivers' hours. Companion to HB-91. To Motor Vehicle Committee.

SB-249 250, Glenn.
Licensing stores, prescribing fees and routing proceeds to old age pension fund.

HB-822, Douglas.
Prohibits transportation of inflammable petroleum products on highways on Sundays and holidays. To Roads and Bridges Committee.

HB-982, Boggs.
Annual license tax to those engaged in refining, heating, cracking or distilling petroleum crude. To Finance Ways and Means Committee.

HB-987, Boggs.
Imposes tax upon all common carrier pipelines of whatever character, engaged in transporting oil in the state. To Roads and Bridges Committee.

HB-988, Boggs.
License tax on those engaged in selling natural gas. To Finance Ways and Means Committee.

HB-989, Boggs.
Provides additional tax upon every corporation engaged in transporting natural gas by pipeline. To Finance Ways and Means Committee.

HB-990, Boggs.
Imposes tax upon all common carrier pipelines engaged in transporting gas. To Finance Ways and Means Committee.

HB-991, Boggs.
To license on sellers or transporters of crude oil. To Finance Ways and Means Committee.

HB-992, Boggs.
Provides additional tax on those engaged in transportation of oil by pipelines. To Finance Ways and Means Committee.

HB-1004, Allen.
Levies tax on all imported gas. To Labor Committee.

HB-1090, Harpel.
Relating to excise tax on motor fuel and dispensation of funds.

HB-1091, Harpel.
Relating to excise tax on motor fuel relating to inspection of gasoline, benzine, etc., and regulating sale and use thereof. To Roads and Bridges Committee.

SB-613, Bosworth.
Relating to inspection, shipment, possession, sale and use of inflammable liquids. To State Affairs and Public Lands Committee.

DELAWARE

HB-14.
Provides for decrease in state gasoline tax.

GEORGIA

HB-104, Rawlins.
Repeals the "rolling store motor vehicle maintenance act". To Ways and Means Committee.

ILLINOIS

HB-5, Weber.
Defers automobile registration to April 1. To Speakers Table.

HB-8, Lund.
Repeals Sales tax. To Speakers Table.

HB-56, O'Neill.
Levies two per cent tax on gross receipts from manufacturing. To second reading.

HB-66, Thornton.
Prohibits transports from carrying more than 20 gallons of gasoline without payment of gasoline tax. To Speakers Table.

SB-27, Fribley.
Requiring pipeline operators furnish bond to secure payment of proceeds of oil and gas to persons entitled thereto. To Oil and Gas Committee.

HB-143, Goddard.
Regulating weight, height and width of motor vehicles transporting gasoline, kerosine and other inflammable and corrosive liquids

Of Congress and State Legislatures during Week

on highways. To Motor Vehicle Committee.

HB-148, Purdy.

Authorizes state highway patrol to inspect and patrol filling stations, tourist camps, etc. To State of Republic Committee.

INDIANA

HB-9, Dausman.

Repeals gross income tax law. Ways and Means Committee.

HB-30, Hoover.

Reduces gross income tax to 0.75 of one per cent. To Ways and Means Committee.

HB-33, Parker.

Requires vehicle taxes be used exclusively for highways. To Ways and Means Committee.

HB-72, Mayhill, et al.

Creates inspector of petroleum and equipment. Provides safety rules for refineries and pipelines and inspection fees. To Judiciary Committee.

HB-103, Parker.

Distributes gasoline tax funds to municipalities, but limits use to street, alley and road improvement. To Ways and Means Committee.

HB-110, Gavit.

Increase gross income tax exemption for retailers from $3,000 to $10,000. To Ways and Means Committee.

HB-153, Copeland, et al.

Exempts filling stations with 80 per cent of business in petroleum products from store license tax. To Roads Committee.

IOWA

SB-17, Hill.

Repeals present chain store tax law and substitutes graduated tax ranging from $10 to $550.

HB-67, Schwendemann.

Repeals present chain store tax and substitutes new tax law graduated from $10 to $550, companion to SB-17.

KANSAS

HB-9 and SB-25, Busick and Walters and Gren.

Provides licensing of test well drilling.

HB-52, Clark.

Changes exemption for gasoline used for other than highway travel to rebate basis.

SB-51, Miller and Skovgaard.

Chain store tax bill; filling stations exempted (Same as HB-5).

SB-75, McDonald.

Levies three per cent of gross market value tax on all crude and natural gas produced in Kansas.

MAINE

SB-42 and 43.

Chain store tax bills. Does not exempt filling stations. Ranges from $5 to $500 per unit.

MASSACHUSETTS

HB-414, Long.

Defers automobile registration to April 1. To Taxation Committee.

HB-650, Coyne.

Regulates installations and servicing of fuel oil burners. To Military Affairs and Public Safety Committee.

HB-773, Akeroyd.

Regulation and control of trucking for compensation.

SB-124, Haley.

Constitutional amendment restricting use of gasoline tax and license revenue. To Constitutional Laws Committee.

SB-131, Cole.

Authorizes department of public works contract with gas and electric companies and municipalities to light state highways. Highways and Motor Vehicle Committee.

HB-951, Crowley.

Prohibiting and penalizing sale of gasoline and other motor fuel at a price lower than the established retail price. To Mercantile Affairs Committee.

MICHIGAN

HB-35 and 39, Dykstra.

Provides local governing bodies should control use of gasoline tax money for highways. To Roads and Bridges.

HB-20, Stanley.

Provides revision of sales tax law to place tax on purchaser. To General Taxation Committee.

HB-86, Nagel.

Fixes hours of truck drivers. To Public Utilities Committee.

MINNESOTA

HB-80, Warvick.

Prohibits the sale of gasoline or oil to persons under the influence of liquor.

SB-49, Gage and Ledlin.

Licenses peddlers. Oil industry exempted.

MISSOURI

HB-34, Farley.

Levying annual license tax on chain store.

NEBRASKA

No. 12, Neubauer.

Exempts gasoline from state tax when used for other than motor vehicles on highways.

No. 80, Garber.

Modifies tax law to shift payment from refiner to dealer.

NEW JERSEY

HB-21, Kerner.

Reduces gasoline tax from 3 to 2 cents. To Taxation Committee.

SB-4, Foran.

Reduces gasoline tax from 3 to 2 cents. To Taxation Committee.

NEW MEXICO

HB-5, Howard.

Repeals port of entry law. To Judiciary Committee.

SB-14, West.

Changes automobile registration date to April 1. State Affairs Committee.

NEW YORK

HB-248, Marble.

Changes automobile registration date to July 1. To Motor Vehicle Committee.

HB-291, and SB-188, Stuart and Warner.

Provides leases for taking natural gas must contain provision that rental shall be either reservation of pro rata share of petroleum or gas taken, or payments not to be less than 12½ per cent of product or moneys therefrom. To General Laws Committee in House.

SB-191, Warner.

Changes registration date to July 1. To Motor Transportation Committee. (Same as HB-248).

NORTH CAROLINA

HB-34 and HB-40, Umstead and Stone.

Forbids diversion of Highway funds. To Finance Committee.

NORTH DAKOTA

HB-70, Jensen, et al.

Permits purchase of gasoline for agriculture and industrial use without payment of gasoline tax. Licenses purchasers and sellers. To Tax and Tax Laws Committee.

HB-72, Page, et al.

Repeals requirement of bond for dealers to guarantee payment of inspection fees. To Tax and Tax Laws Committee.

OHIO

HB-84, Kasch.

To repeal state retail sales tax.

HB-115, Kasch.

Increases state excise taxes to 6 per cent of gross income and makes them uniform.

HB-141, Kasch.

Increases gasoline tax from 4 to 5 cents per gallon; provides flat fee of $1 for motor vehicle license.

HB-144, Reading.

Revises sales tax: 1 cent on purchases of 1 to 50 cents; 2 cents 50 to 75 cents; 3 cents, 75 to $1.00.

OKLAHOMA

HB-92, Tankersley.

Reduces gasoline tax from 4 to 3 cents per gallon.

HB-96, Sweeney.

Chain store tax. Exempts gasoline stations where daily stock of gasoline, motor oil and accessories do not exceed $1500. Tax ranges from $20 to $1250.

OREGON

HB-28, Greenwood.

Permits highway commission to increase height, length and weight of trucks.

HJ-Res.-4, Perry.

Constitutional amendment preventing cities from diverting gasoline tax funds.

PENNSYLVANIA

HB-7 Ominsky.

Repeals authority of political subdivisions to impose sales taxes. Public Assistance Committee.

HB-14, Jirolanio.

Provides refund of taxes paid on liquid fuels used other than in motor vehicles, motor boats and in aircraft.

HB-43, McKinney and Muir.

Changes automobile registration date to April 1.

RHODE ISLAND

HB-559 Mills.

Changes automobile registration date to April 1. To Judiciary Committee.

SOUTH CAROLINA

HB-64, Graham, et al.

Provides deduction from gasoline tax to cover cost of collection. To Ways and Means Committee.

HB-73, Thomas.

Distributes 2 cents of state gasoline tax to counties. To Ways and Means Committee.

SOUTH DAKOTA

S. J. Res. 5, Seide.

Proceeds of automobile license fees and gasoline tax to be spent exclusively on highways.

HB-39, State Affairs Committee.

Provides four-cent tax on gasoline. Regulates sale of gasoline and puts administration in highway department.

SB-14.

Reduces state sales tax to 2.5 per cent.

SB-32, Morgan.

Repeals tax on gasoline refunds. To Judiciary Committee.

TENNESSEE

HB-112, Austin.

Prohibits commercial trucks on highways between midnight Saturday and Midnight Sunday.

TEXAS

HB-13, 14 and 94.

Provides revisions in truck load limits.

HB-18, Tennant, et al.

Making permanent oil and gas conservation act by repealing section setting expiration date as Sept. 1, 1939.

HB-117, Harrell.

Providing for refund on gasoline used in municipally-owned automobiles.

HB-160, Morris et al.

Anti-discriminatory act, prohibiting rebates and sales to different persons at different prices.

HB-184, Coleman, et al.

Prohibiting highway transportation of more than 30 gallons of gasoline in other than one regular fuel tank.

HB-203, Allison et al.

Setting up four cents maximum "gas" tax refund on gasoline used for non-highway purposes.

HJR-11, Petsch and Bond.

Exempting gasoline from payment of proposed two per cent retail sales levied for old age assistance.

S. J. Res. 7, Hill.

Constitutional amendment prohibiting certain officials from running for governor, unless they resign.

SB-40, Spears.

Fair trade act permitting fixing and maintenance of prices on trademarked and branded commodities.

S. J. Res. 5, Sulak.

Two per cent sales tax. Motor fuel exempted.

SB-23, Roberts.

Truck regulation bill. Exempts petroleum carriers.

UTAH

HB-45.

Imposes tax of 4 cents per 100 cubic feet of natural gas.

HB-51, Mason, et al.

Refunds gasoline tax on fuel not used in automotive or aircraft.

SB-25, Lindstrom.

Companion to HB-51.

SB-40, Ellett.

Provides for spending of gas tax on aviation fuels on airport improvements.

SB-71, Williams.

Earmarks certain gasoline tax funds for airport improvements.

VERMONT

HB-17, Burke.

Relating to weight of motor trucks. To Highways and Traffic Committee.

WEST VIRGINIA

HB-27, George.

Chain store law. Ranges fror $2 to $500 each. To Finance Committee.

HB-37, Loucas.

Eliminates consumer sales tax on gasoline, natural gas, etc. To Finance Committee.

WISCONSIN

SB-4, Yindra.

Provides highway fund to be used exclusively for purposes provided by law. Joint Finance Committee.

CHANGES STATUS

ARIZONA

HB-36, Reserving oil rights on state lands. Reported favorably in House.

ARKANSAS

SB-4, Reducing Truck license fees. Withdrawn in Senate.

IDAHO

HB-24, Exempting sales between dealers from tax. Passed House. Reported favorably in Senate.

HB-11, Diverting 20% of gasoline tax to counties. Passed House.

ILLINOIS

SB-1, Extending sales tax. SB-2, and 3, relating to sales tax. All passed Senate.

OKLAHOMA

HB-11, Repealing port of entry law. Passed House.

SB-34, Extension of Interstate Oil Compact. Passed by Senate.

SB-1 and HB-1, Creating three man Highway Commission. Passed both Houses.

H. Con. Res. 10, Asking Oklahoma congressional delegation to take necessary steps to adjust inequitable freight rates. Passed.

PENNSYLVANIA

HB-3, Liquid fuels tax relief fund. Passed House.

SOUTH DAKOTA

H. Con. Res. 2, Memorializing Congress to repeal federal gas tax. Passed House.

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Gasoline Faces Lower Rail Fare for World's Fair Tourists

By WARREN C. PLATT, Editor

The railroads are going to give the oil industry a run for the business of carrying visitors to the New York World's Fair, and presumably also to the one at San Francisco, this coming year.

The roads have announced special rates for the New York fair as low as 50% of the regular rates; while the Pennsylvania Railroad has announced that it will haul visitors from New York City to the Fair grounds at the low rate of 10 cents each way. Compare this last with driving from the city, fighting traffic or getting lost and paying for gasoline and parking.

While the oil industry will not greatly suffer this coming summer from whatever increase in business the railroads get, nevertheless success to the railroads will mean less gallons of gasoline sold by the oil companies particularly within 250 to 500 and even 1000 miles of New York.

The railroads can be expected to advertise the "ease" and "comfort" of their mode of transportation, the greater speed in certain respects and probably the absence of highway accidents. The roads probably will drive pretty hard at the oil industry's business because of their straightened financial circumstances and perhaps even to build up background for support of more regulations of truck and passenger automobiles.

On the other hand, the oil companies can tell their customers about the modern highways centering in and around New York City, the broadest and safest and speediest and altogether the finest in the country; highways that demand that the motorist move at 45 miles an hour or go to jail. They know how to keep traffic moving there and do it safely, too. The oil companies can publish maps and pictures of these highways and special automobile bridges and tunnels that make entering New York today vastly different from ten years ago, yes even five years ago. Whoever has inched down a steep hill waiting hours for his turn on a ferry, should try driving to New York this year. If he does he must be prepared to "keep moving" as it is just as easy as getting into the "home town" if not even more so.

Every oil man should inspect these new modern highways so that on his return home he can talk all the more intelligently and accurately of the value of better highways and some speedways at home.

We have no doubt that the oil industry will furnish the easier transportation to New York but the oil companies in all probability, will have to tell their story most effectively else the railroads may convince a few million people to the contrary.

New Name on Tanker Honor Roll

The rescue of the passengers and crew of the Bermuda air-liner Cavalier, by the Standard Oil Co. of New Jersey's tanker vessel Esso Baytown, adds another chapter to the story of service at sea in which oil companies' tankers have played a prominent role.

People frequently comment on the number of times, when disasters occur at sea, where a tanker has been the first vessel to arrive and has led in the rescue work. Without detracting from the valor of the officers and crew of those tankers—the men who have many times risked their own lives in going to the aid of other vessels, something may be said for the type of vessels that make up the tanker fleets and the policies of the oil companies in maintaining the high personnel of their officers and crews. In numbers also the tankers rank high among other classes of ocean carriers. When trouble comes, the chances are that a tanker may be among the vessels closest by to pick up the radio distress call.

Modern oil tankers are fast, well-equipped vessels. They have all manner of safety devices such as independent radio receivers, automatic S.O.S. receiver, radio direction finders, complete radio communication equipment with a range upwards of 2000 miles, inert gas systems for the protection of the cargo tanks and automatic alarms to indicate failure of lights, oil supply and similar equipment, in addition to standard safety equipment.

With the oil industry represented on the seas by equipment and officers and crew of high type throughout, it is little wonder that the names of tanker vessels figure so prominently in rescues.

Keeping Ahead of Demand

Every few years the public officeholders who would like to run the oil business trot out the old bogey-man of a prospective shortage in oil; and each time the oil industry has been able to point to how it has increased the known reserve supply.

The last announcement of the experts of the American Petroleum Institute adds more than two years to the known supply, at the present rate and character of use. We now know we have almost 16 billion barrels safely located underground and available whenever we want to draw on it.

What our critics seemingly would have us do is to all quit work, and use our capital and energies to locate all the oil there is in this world at once. The industry is spending enough money in an orderly discovery of the oil resources to keep well ahead of demand. At the same time its scientists are devising methods to get more out of the crude oil.

There are other problems that are considerably more pressing on the country today than any impending shortage of oil.—W.C.P.

1938 Federal 'Gas' Tax Receipts Drop 1% Due to Decline in December Collections

N. P. N. News Bureau

WASHINGTON, Jan. 23. — Federal gasoline tax collections in 1938 totaled $200,880,797.19, a decrease of 1.05 per cent under 1937 collections, according to final Internal Revenue Bureau figures for the year. Collections in 1937 totaled $203,025,379.73.

However, as has been pointed out by the IRB before, the decline in tax receipts is not necessarily indicative of a demand below 1937, since late reporting of figures, either by refiners or by some of the IRB offices in the field, sometimes throws the monthly totals off:

The December total collections were $16,936,817.83, compared with $17,585,707.17 the previous December. This decrease is hardly in line with the Bureau of Mines' estimate of increased demand for gasoline demand in December and January.

Gasoline tax collections for six months (not in succession) of 1938 were below collections in the corresponding months of 1937, and for six months they were higher. A month-by-month comparison follows:

Month	1938	1937
Jan.	$16,531,890	$15,020,548
Feb.	13,541,200	14,597,925
March	14,218,797	12,970,980
April	16,436,554	13,591,593
May	14,380,266	16,287,064
June	15,543,572	17,561,469
July	16,264,421	19,471,055
Aug.	19,369,070	13,805,395
Sept.	20,425,514	25,190,855
Oct.	18,423,803	18,267,972
Nov.	18,808,894	18,674,817
Dec.	16,936,818	17,585,707

The federal lubricating oil tax brought in $2,109,251.55 in December, compared with $2,558,476.42 in December 1937. This brings the total lubricating oil tax receipts for 1938 to $30,495,339.29, compared with $33,681,590.41 in 1937.

December receipts from the federal tax on pipeline transportation amounted to $939,764.85, compared with $1,074,545.86 in December of 1937. Total 1938 collections from this tax were $11,599,693.10; in 1937 they were $12,304,202.71.

Oil's Washington Calendar

Below are given the dates and notices of hearings, proceedings, new legislation, etc., which are of importance to oil companies. Notice is also given of regulations issued, interpretations of laws, new publications, etc., with information as to how readers may secure official copies of these.

HEARINGS:

Interstate Commerce Commission:

Feb. 20—First of series of hearings on question of need for safety regulation for private truckers (Washington). Further hearings as follows:

Feb. 23—New York.

Feb. 27—Chicago.

March 2—Minneapolis.

March 6—Spokane.

March 8—Portland, Ore.

March 13—Los Angeles.

March 17—Omaha.

March 20—Memphis.

Federal Power Commission:

Feb. 6—Texas Gas Utilities Co. application for authority to export natural gas from Texas into Mexico.

FINAL DATE FOR FILING OF BRIEFS:

Interstate Commerce Commission:

Feb. 1—In matter of proposed crude oil pipeline rate reduction.

EFFECTIVE DATE OF RULINGS:

Interstate Commerce Commission:

Jan. 31—"Hours of Service" regulations for drivers of for-hire trucks into effect.

MEETINGS:

Feb. 2—Fourth annual conference, Conservation Branch of Geological Survey (Salt Lake City, Utah).

REPORTS AVAILABLE:

"Survey of Fuel Consumption at Refineries in 1937," by G. R. Hopkins, assistant chief economist, Petroleum Economics Division, U. S. Bureau of Mines, Washington.

"Typical Oil-Field Brine-Conditioning Systems Preparing Brine for Subsurface Injection," by Sam S. Taylor, C. J. Wilhelm, and W. C. Holliman, petroleum engineers, Bartlesville station, U. S. Bureau of Mines, Washington.

"Studies of Certain Properties of Oil Shale and Shale Oil," Bulletin 415, compiled by Boyd Guthrie, associate chemist, Bartlesville station, U. S. Bureau of Mines, Washington.

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Oil Tax to Pay Pensions? 'No,' Says Texas Governor

N. P. N. News Bureau

TULSA, Jan. 20.—A transaction tax of 1.6 per cent—and not some additional form of taxation tied onto the petroleum industry—to finance his campaign-promised old age pensions was the initial proposal of W. Lee O'Daniel, Texas' new governor in his first speech to the Legislature here Jan. 18. The entire speech was devoted to old-age pensions and recommendation for elimination of ad valorem taxes in the state.

Thus were dispelled the rumors of the past several weeks that the new governor was going to look to the oil industry in Texas to carry the burden of his pension plan. He apparently realized what that burden would be, if he had ever considered such a move, for in his speech, the new governor said:

"There are, of course, a number of methods that can be found. . . . It has been suggested that this money be raised exclusively by a tax on oil. If we should attempt to do this, it would require probably an additional 8 cents per barrel tax, supplemented by similar increases in the taxes on sulfur and other natural resources. I have not recommended this tax to the legislature for the reason that I believe it would be unwise to attempt to raise this amount of money for this purpose from our natural resources industries.

"I considered carefully the proposal to levy a flat gross receipts tax on oil, sulfur, insurances companies, public utilities and other major lines of business and I reached the conclusion that if this character of tax were levied it would preclude writing the tax into the Constitution because of the numerous exceptions and variations which it would be necessary to have if such a plan was ot be made workable."

Apply Tax To All

The governor explained that the transaction tax he proposed would be applied alike to every line of business and industry. The plan proposed a levy, therefore, which many estimated would amount to almost 8 per cent by the time the final transaction is consummated. There is no doubt the proposal is much broader than the retail sales tax plans the legislature in previous sessions had snubbed.

On the other hand the governor's proposal was seen by some as offering a solution not only to the old-age assistance fund but of the whole state's fiscal problem. It was estimated that the transaction tax would bring in revenue of $45,000,000 annually but the elimination of the ad valorem tax would cut the net revenue to about $25,000,000 annually.

Hits Cost Of Compensation To Producers

N. P. N. News Bureau

LOS ANGELES, Jan. 21. — Dangers to the independent California oil producer and other employers if lawmakers now in session at Sacramento adopt a new compensation insurance bill, were outlined last week by Rush M. Blodget, executive vice president of the Oil Producers Agency.

Blodget said that the proposed measure—(SB-250) (Foley)—would make the producer a guarantor of the compensation hazards of his independent drilling contractor; that, even if the contractor agrees to, and does furnish compensation insurance, the liability of the operator continues. In such cases, the operator would be obliged to re-insure his continuing liability, he said.

Furthermore, it was pointed out that the old rule of liability ceasing when a policy is purchased is under attack, and that the new bill proposes that, if the insurance company fails to pay, or cannot pay, an award, the operating company is still liable.

Minor dependents would still be able to collect until the age of 21 years, under this measure. Disability payments would commence after 7 days, a provision stating that, if the disability continues four weeks or more, the payments shall include the first seven days. The minimum average weekly earnings would be raised in this proposal, from $6.41 to $15, and the ultimate death benefit from $5000 to $7500.

Other provisions are that awards for compensation would have preference over other debts of the employer; and that, if the insurance carrier has several kinds of insurance, compensation awards would have preference over claims for other types of insurance losses.

Blodget declares this measure, if adopted as written, would raise the cost of compensation insurance at least 50 per cent. The bill has been referred to the Senate committee on Capital and Labor, and will come up for passage in March, after the recess, it is said.

Did Elliott "Nominate" Garner? Radio Talk Has Texas Guessing

FORT WORTH, Jan. 21. — President Roosevelt's Texas-by-adoption son, Elliott, has some of the populace in this state and elsewhere puzzled as a result of his broadcast Jan. 16 over his radio station here. They are trying to figure if Elliott "nominated" Vice President John N. Garner for President, or if his talk made it sound that way.

One person close to Elliott was quoted as saying he did not advocate Garner-for-President, and that he had been widely misquoted. Texas papers apparently obtained the other slant, however, one of them going to the trouble of running an editorial on the subject and publishing a cartoon.

Early in his speech he said, "When industrialization is accomplished — or perhaps even while it is under way—the only goal left open for supremacy will lie in governmental influence. And since such political leadership and prestige has been denied Texas in the past, WE feel that she is due some consideration NOW. We feel that the time will come soon for a Texan to be elected to the Presidency of the United States.

Feels Texas Neglected

"The vice president at the present time is a native of our state, that is true. But until John Nance Garner was elected to that high office in 1932, Texas had never produced a native son to gain a federal office higher in rank than a seat in the United States Senate. Only once had a citizen of Texas been chosen to a Cabinet post. . . ."

Farther along in his speech Elliot returned to Garner by stating, that "a large number of the more influential posts are occupied by Texans, who are being intrusted with much of the detail of government operations," and then listing some of the Texans, leading off with praise for Garner.

Oil Men Back Coal Interests On Import Tax

N. P. N. News Bureau

WASHINGTON, Jan. 23. — Russell B. Brown, general counsel of the Independent Petroleum Assn. of America, in his Washington letter lauds the purposes of the bill of Rep. Joe Smith, W. Va. to increase 0.5 cent to 3 cents a gallon the tax on imported crude and fuel oil (N.P.N. Jan. 18, p. 19).

Brown said the coal industry (sponsors of the bill) "is the first branch of the nation's business, aside from the oil industry, to recognize the importance of a proper excise tax on imports of petroleum and its products," and added:

"Because the present taxes on petroleum are too low, some of the domestic products have been forced down into the low-price levels where they present a serious competition with bituminous coal. This bill should not only receive the support of the coal industry, and, naturally, of the petroleum industry, but should also be favored by the many other portions of our industrial life which are very directly dependent upon the purchasing power of the petroleum industry for a large part of their business. Our association has several times gone on record as in favor of an increase in these excise taxes."

'Inferior Uses'

Earlier, Brown in a statement to NATIONAL PETROLEUM NEWS had said the Smith oil import tax bill would "create a very desirable situation. It would establish new confidence in the domestic petroleum industry, it would make possible the better conservation of our petroleum reserves, it would eliminate some wasteful practices in present production, it would increase the employing power of the industry and also its purchasing power, and, not least, it would prevent much of this valuable resource from being applied to inferior uses.

"Actual distress exists in many parts of the petroleum industry, due in large measure to the unfair competition offered by importations of foreign petroleum," Brown added. "Some oil producing states find it difficult to secure the necessary general acceptance of a sound conservation program because of the low price level for domestic petroleum made necessary by the foreign competition."

Big Catalytic Plants Planned By 3 Companies

By ARCH L. FOSTER
Technical Editor

CLEVELAND, Jan. 23. — Catalytic cracking received another powerful boost today when it was announced at Chicago by Dr. Gustav Egloff of Universal Oil Products Co. that three large refining companies are planning to install units using a process developed by Universal. The catalytic process was first announced before the American Petroleum Institute last November at its meeting in Chicago. Names of the companies are withheld but it is understood that they are three of the largest oil companies in the country.

The new process, it is claimed, produces 85 per cent of motor fuel of 81 octane number from heavier petroleum fractions and gasoline of 100 octane number may be made "at will", the announcement states. Average yields for thermal cracking processes now used are 70 to 75 per cent yields of 72 octane number gasoline.

Research in cracking has turned to catalysis, by which a catalyst foreign substance promotes a decomposition and rearrangement reaction in hydrocarbons, because these processes operate at relatively lower temperatures and pressures than the present widely used thermal processes.

Of immense importance is the influence of these new processes on the trend toward higher octane number motor fuels, and the tremendous impetus given to aviation by the introduction a short time ago of 100 octane number fuels. In the present status of aviation, this country controls several methods for the production of 100-plus fuels. Selective polymerization - hydrogenation is the oldest commercial method in general use for producing such fuels, and the industry in this country now has capacity enough to meet all demands for that type of fuel for the immediate future for both military and commercial aviation, it is said.

Last November the Houdry process for catalytic cracking and treating petroleum products was also announced, from the products of which a large quantity of 100 octane number aviation fuel has been and is being made. With the wide application of these catalytic processes to refining of motor and aviation fuels a further addition will be made to the quantity of super fuels potentially and actually available to this country's military and commercial aviation industries. The projected addition of large fuel-making capacities to the refining industry operating under the Universal Oil Products catalytic process gives still further assurance that adequate and increasing amounts of super fuels will be made available at relatively low cost for all purposes in the near future.

Importance of these improved aviation fuels is emphasized by the National Advisory Committee for Aeronautics in its 1938 annual report to the President. "The continued increase in the power output of aircraft engines is principally obtained by the use of premium fuels having high anti-knock values," the committee's report stated.

Engine power being limited by the efficiency of cylinder cooling, which in the air-cooled engine is limited in turn by the width of cooling fins, a new method has been developed whereby fins are formed separate from the cylinder wall and attached to the cylinder, eliminating foundry casting limitations, the report brings out. These developments eliminate one of the greatest hindrances to designing engines which will utilize fully the efficiency of the super fuels now made available in quantity by the U. S. refining industry, it is said.

In the present status of international relations, great increases in the construction of military air fleets are well under way. That people having the largest assured supply of super aviation fuels is in the best position to make its air defense effective, and these new processes, along with engine and plane design which their product makes practicable, make certain a supply of these fuels and new ones of higher efficiency for all purposes for which they may be required in this country.

Michigan Plants Are Consolidated

ALMA, Mich., Jan. 23.—Consolidation of the properties of McClanahan Refineries, Inc. with Leonard Refineries, Inc. of Michigan, marks an outstanding development in Michigan refining circles. Leonard Refineries Inc. has increased its capital stock from 750,000 at $1 par value to 500,000 at $3 par. The assets of the McClanahan company were acquired in return for 91,666 2/3 shares in the Leonard company.

This consolidation became effective Jan. 13, and all employes of the McClanahan company have been retained, Reid Brazell, vice president and treasurer of the Leonard company stated. Of the new capital stock 341,666 2/3 shares are outstanding, the other shares remaining in the treasury.

The officers of the company remain the same, being J. W. Leonard, Jr., president; Reid Brazell, vice president-treasurer; B. M. Jones, vice president-secretary; Wm. H. Watkins, assistant secretary-treasurer. Brazell is general manager, M. D. Vandelery sales manager, Robt. W. Pollard and E. F. Sondregger are superintendents at Alma and St. Louis, respectively.

The new company is also building an Ethyl blending plant.

Cordell Heads Barnsdall Rfg.

By Teletype
N. P. N. News Bureau

TULSA, Jan. 24.—O. L. Cordell, widely known in Mid-Continent oil marketing circles, has been named president of Barnsdall Refining Co., following the resignation of E. B. Reeser. He assumed his new duties Jan. 21.

Other changes in the Barnsdall company include the resignation of Frank E. Holsten as vice president and general manager, and of Jeff Boucher as Oklahoma division manager of marketing. Holsten will remain with the company for six months in a consulting capacity. Boucher will be succeeded by H. Legros, former division manager of the Iowa-Nebraska territory.

Cordell was vice president of the Waite Phillips Oil Co., when it was purchased by Blair Bros. and merged with the Barnsdall Oil Corp. He later became an official in the Independent Oil & Gas Co. and after that company was absorbed by Phillips Petroleum Co., was an official in the latter company for a time.

Reeser is known to have desired for some time to relinquish the presidency of the refining company, a position to which he was elected when the refining and marketing branches of the Barnsdall interests were divorced from the producing and pipeline activities, conducted by the Barnsdall Oil Corp. He will continue as president of the oil corporation and will remain a director of the refining company.

Economics Of Refining AIME Meeting Topic

N. P. N. News Bureau

NEW YORK, Jan. 25.—Following custom, the economists of the oil industry will have their day, on the program of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers, at its annual meeting in New York, Feb. 13-16.

Feb. 14 will be devoted to production engineering practice outside of this country; Feb. 15 to an extensive statistical review of production throughout the world and Feb. 16 to petroleum economics.

In the production engineering session these papers will be given: "Some Aspects of Mud Technique in Iran", by M. W. Strong; "Air Conditioning and its Results in Bahrein Island Operation", by Colin W. Reith, Bahrein Petroleum Co.; "Drilling for Oil on the Headwaters of the Amazon in Eastern Peru", by J. E. Brantly, Drilling and Exploration Co.; "The Turner Valley Field", by Vernon Taylor, Imperial Oil Ltd.

Joseph E. Pogue and Norman D. FitzGerald of New York, Chase National Bank, and John D. Gill of Philadelphia, Atlantic Refining Co., are down for papers on economic subjects. This session will open with presentation of the Status and Outlook of Petroleum Supply, Demand, and Stocks.

Pogue will then discuss "A Design for More Effective Proration" and will be followed by Gill to speak on "The Economic Significance of Overdevelopment". Fitzgerald will close the session as now scheduled with "Economic Equilibrium in Petroleum Refining".

The Treatment of Coal with Oil and Other Petroleum Products is a subject scheduled for two sessions the morning of Feb. 14, on the petroleum division program and also on the previous day, for the coal division. J. M. Pilcher and Ralph A. Sherman, Battelle Memorial Institute, are authors of the paper.

C. O. Lockwood In New Position

N. P. N. News Bureau

TULSA, Jan. 20. — G. O. Lockwood, since 1930 safety director for the Cities Service Oil Co. and Empire Pipe Line Co., Bartlesville, Okla., has resigned to become safety engineer for the Continental Casualty Co., with headquarters in Tulsa.

Transportation Cost Jobbers' Life Line, Missourians Told

By E. L. BARRINGER

ST. LOUIS, Jan. 23. — Transportation is the life line of the oil jobbers' business, James F. Lawrence of Tulsa, rate attorney, told the Missouri Independent Oil Jobbers Assn. in annual convention here last week.

Lawrence was speaking for the equalization of transportation costs for all types of marketers. Transporters of petroleum products by pipeline now have the advantage in marketing, he said. Major oil companies, he told the Missouri jobbers, can sell gasoline and fuel oil below cost and yet make a profit through their savings by pipeline transportation.

In the entire state of Missouri, he said, major companies with pipelines can market gasoline at one cent a gallon less than the actual cost of producing and, through savings in pipeline transportation, will still have one cent a gallon more for profit than other marketers.

Major companies, he charged, in effect do not pay the published pipeline tariff, but only the actual cost of pipeline transportation since they receive as a dividend the difference between the actual cost of transportation and whatever they have paid to the pipeline company for the transportation service.

The railroad's oil revenue in 1937 was $103,500,000 less than in 1930, Lawrence stated. If railroads in 1937 had transported the same percentage of the nation's total oil movement as in 1930 their revenues would have been about $253,000,000 greater, he said. If railroads now transported all the oil moved in this country, their revenues would be up about a billion dollars annually, Lawrence said.

"If every concern in the oil business paid the same for transportation then there would be stable business for every industrious man," said Lawrence.

Support of a complaint filed against the railroads and pipelines with the Interstate Commerce Commission on behalf of the Petroleum Rail Shippers Assn. was given by Lawrence as one of the means for the jobber to solve his problems.

The association adopted a resolution urging members to join in the suit.

Other self-helps for jobbers given by Lawrence were to make their problems known to the O'Mahoney monopoly investigating committee, and to the Department of Justice.

Program Mapped

Zenn Kaufman, of New York, author and lecturer on "Showmanship in Business" and T. L. Gauke, of St. Louis, Social Security Board field manager, were the other program speakers. The association held a jobbers meeting, and the banquet, entertainment and dance came on the first evening of the convention.

A lengthy association program was mapped during the meeting, mainly on state issues. On national issues a resolution was adopted urging Congress to enact the divorcement bill, another called for the Missouri association members to support the National Oil Marketers Assn.

Fair trade laws and regulation of truck transports were discussed. Both subjects were referred to the legislative committee for further study. Other resolutions adopted were:

To oppose any gasoline tax increase until proper plan had been formulated to eliminate city taxes and a long term highway program.

To seek to increase to 90 days the time permitted for obtaining refunds through the oil inspector's department if gasoline tax has been wrongfully paid on some other product. The present law limits the time to 30 days. If a mistake has been made, such as paying the gasoline tax on a tank car of kerosine, the oil inspector upon being furnished proof can call for a voucher for a refund. If the error is not caught within 30 days at present the oil marketer must seek a refund through a legislative appropriation.

Favoring an entirely new inspection law, with a reduction in fees and with revised modern specifications. An entirely new law was deemed better than attempting amendments to the present petroleum products inspection law.

Favoring a change in the gasoline tax refund provisions to provide that those seeking a refund must file an affidavit with a receipted invoice showing that the oil company has been paid for the purchase.

A membership drive was also planned by the association. The state is to be zoned, with three or four counties in each district. A committee of two or three jobbers is to be appointed for each zone. This committee as a body will solicit memberships. The drive is to start at once, with first reports due Feb. 1.

The association re-elected as president D. Oty Groce of St. Charles, the Groce Independent Oil Co. Robert W. Hadlick was re-elected executive secretary.

New officers are Roy W. Blair of Troy, Lincoln Oil Co., vice-president; Paul H. McMann of Seymour, Independent Oil Co., secretary; and John Guy Gibson of Jefferson City, Capital City Oil Co., treasurer.

Membership in the board was increased from 10 to 14 members.

New directors are John Mothershead of De Soto, De Soto Oil Co.; J. E. Schmuke of Jackson, Jackson Oil Co.; E. C. Smith of Cape Girardeau, Kelso Oil Co.; J. W. Sibert of Knobster, Sibert Oil Co.; A. W. Nation of Springfield, Ozarks Petroleum Service, Inc.; N. A. Newmaw of Milan, Home Oil & Supply Co.

Directors re-elected are J. A. Salter of Kirksville, Salter Oil Co.; H. E. Milton of St. Louis, Milton Oil Co.; W. Edward Turner of Hopkins, Wiley-Turner Oil Co. and Paul McMann and John Guy Gibson.

The 1940 convention is to be held at the Elms hotel, at Excelsior Springs.

Iowa Oil Jobbers Explain Why They Back Chain Tax

N. P. N. News Bureau

CLEVELAND, Jan. 23.—Independent oil jobbers of Iowa are backing the bill for a new and higher Iowa tax on chain stores to "protect" themselves against certain practices of major oil companies, according to a statement by A. C. Gienapp, secretary of Iowa Independent Oil Jobbers Ass'n., received here by NATIONAL PETROLEUM NEWS.

Iowa jobbers, at a meeting recently in Des Moines to discuss the new chain-store tax bill, complained bitterly about major companies "subsidizing" marketing losses from profits in other branches of the industry, giving "excessive" commissions to commission agents, and other practices, Gienapp pointed out.

"We dislike government regulation and control as much as anyone, said Gienapp, adding that in view of the "circumstances," however, the jobbers had voted "overwhelmingly" to endorse the new chain-store tax measure for "self-security."

Text of Gienapp's statement, follows:

Gienapp's Statement for Iowa Jobbers

"The Iowa Independent Oil Jobbers Association called a general meeting of all eligible jobbers, members and non-members alike, recently, for the sole purpose of discussing the proposed Chain Store Tax Bill, now pending in the state legislature; what action the association is to take on this matter.

'In the two hour discussion, the joobers complained bitterly relative to major oil company marketing practices, such as subsidizing marketing losses from other branches of the industry, paying large rentals for outlets and sub-leasing them to lessee's for less money, thereby, increasing the number of outlets to already an over expansion, further decreasing the volume per unit and at the same time increasing the marketing cost to the dealer and jobber; pay excessive commissions to commission agents with the understanding, a goodly portion of it to be used in securing dealer and commercial accounts; reducing the dealer tank wagon price in order for the dealer to encourage gasoline price wars, which are so prevalent at the present time; carry dealer customer credit accounts beyond reasonableness and good judgment. In addition, the majors maintain bulk plants, retail gasoline pumps, pay taxes and insurance, carry inventories and maintain a flock of unlimited salesmen, supervisors and what not, all adding additional expense which must be directly charged to the marketing branch of the industry. The losses, of course, are absorbed in other branches, which we feel are unfair.

"We believe we have a perfect right for our existence and will fight for that existence in the protection of its investment, regardless how small it may be; be as it may, it is just as dear to the individual jobber as the investment of the majors with their millions, yes, even billions. We further believe, the independent system of distribution is sound economical and fair to the general public, and should not be destroyed by unfair trade practices.

"In 1935 the Iowa Legislature passed a Chain Store Tax Law which put the oil industry under the provision of the Act. The major group immediately leased their service station to their operators, which are now called lessee's, for the purpose of becoming exempt from under the provision of the Act. This is often referred to as the 'Iowa Plan' of marketing. Before anyone could test the validity of the action by the majors, as to whether or not they were exempt, certain sections of the Act itself were invalid and held unconstitutional. Since then, nothing more has been done with the Statute as it now stands.

"The Act, while not accomplishing its original purpose, has eliminated the C.I.O. from gaining a foothold in the marketing branch of the industry and enabled marketers to escape from under the provision of the Social Security Act. It is our understanding, it also relieves the companies from other responsibilities, such as public liabilities and

etc. So you can readily see the Act itself did some good.

"There is now a bill pending in our State Legislature to repeal the 1935 Chain Store Tax Act in its entirety and substitute in lieu, thereof, a new Chain Store Tax Bill.

"Chain Store Tax, or any other kind of legislation is prompted by unfair trade practices by one group gaining an advantage over another. This is only natural. The independent jobbers wish to be fair to all types of distribution and penalize no one. We dislike government regulation and control as much as anyone, yet, on the other hand, in view of the above circumstances, in fairness to the general welfare of the public and a feeling of self security for themselves, the independent oil jobbers of Iowa, by secret ballot vote, went on record overwhelmingly endorsing the new Chain Store Tax Bill, with no exemptions.

"The new bill provides for a graduated occupational unit tax, commencing at $10.00 per unit up to and not more than ten units, graduating from there on up to $550.00 per unit for everything over 500 units under the same general management, supervision, ownership or control, whether operated in Iowa or not. The Bill is patterned after other state chain store tax Acts and has been held constitutional by the United States Supreme Court. The bill will be known as the Iowa Community Preservation Act."

'No Curbstone Opinions' On Ohio Program

CLEVELAND, Jan. 23. — "More than curbstone and cracker-barrel opinions", in the words of Robert A. Warfel, executive secretary of the Ohio Petroleum Marketers Assn., will mark the sessions of the association's annual convention, Feb. 7, 8 and 9 at the Hotel Deshler-Wallick, Columbus.

A panel discussion by three college professors will be the highlight of the closing session Feb. 9. Topics to be discussed include price control, governmental regulation of industry, anti-trust laws and other current topics of vital interest to oil men. Those conducting this discussion will be Dr. T. N. Beckman, Dr. Kenneth Dameron, and Dr. H. H. Maynard, all of the College of Commerce of Ohio State University. Another speaker at the closing session will be Claris Adams of Columbus, president of the Ohio State Life Insurance Co.

Speakers for Feb. 8 and their subjects are:

Percy H. Whiting, vice-president, Dale Carnegie Institute, New York, "Secrets in Selling".

R. J. McDowell, sales promotion and merchandising department, Socony-Vacuum Oil Co., Inc. (White Star-Ohio Division), "The Whys and Hows of Successful Marketing".

Warren C. Platt, publisher and editor, NATIONAL PETROLEUM NEWS, Cleveland, "Today's Marketing Situation".

Speakers at a luncheon Feb. 7, will be Gov. John W. Bricker of Ohio, and Arthur C. Horrocks, public relations counsel, Goodyear Tire & Rubber Co., Akron, who will talk on "Get It If You Can". This will be followed by a closed meeting for members, addressed by E. V. Weber, president of the association, followed by an open forum for discussion.

A trade exhibit will be a feature of the convention. The annual banquet will be Feb. 8.

Apex Goes to 'Dixie'

N. P. N. News Bureau

CLEVELAND, Jan. 23.—Apex Oil Corp. of Nashville, Tenn., marketing in 17 counties of middle Tennessee and southern Kentucky, has been granted a "Dixie" franchise, headquarters of the Dixie organization announces. By Feb. 1, the Apex company expects to have converted all of its retail outlets to marketing under the Dixie group brand.

Besides a river terminal, storage and main offices in Nashville, the company has bulk plants at Clarksville, Paris, Dover and Franklin, Tennessee, and at Hopkinsville, Kentucky. Ward Stattman is general manager of Apex; Robert Montgomery, general sales manager.

Oil City-Cleveland Rail Rates Reduced

N. P. N. News Bureau

WASHINGTON, Jan. 23. — A tariff, effective Jan. 28, reducing rail freight rates on petroleum products from the Oil City area to points in Pennsylvania and Ohio has been filed with Interstate Commerce Commission by railroads serving the area.

Under the tariff, rates to virtually all points which have heretofore been 17 cents per hundred pounds (including the Cleveland area would be 14.5 cents per hundredweight.

The Dog Has His Day

CHICAGO, Jan. 18. — W. E. Rogers, Jr., Sinclair dealer of Neosho, Mo., has a pan reading "For Dogs" hung on the light pole at each end of his station island. Every motorist's dog gets a drink if his owner asks for it.

Oil Trucker Granted Permit For Operations in 5 States

N. P. N. News Bureau

WASHINGTON, Jan. 23.—Interstate Commerce Commission has granted Petroleum Transit Corp., Detroit, authority to extend its operations to include what is one of the most extensive areas in the United States served by a single common carrier trucker of petroleum products.

In granting the authority, the ICC disposed of railroad protests with the statement:

"Shippers and consignees of petroleum products are entitled to adequate service by motor vehicle, as well as by railroad."

The new certificate covers trucking operations:

From Joliet, Ill., to Michigan and Indiana points.

From East Chicago, Ind., to Michigan and Illinois points.

From the Detroit area to Indiana points.

From Toledo, Findlay and Lima to Indiana and Michigan points.

From Pittsburgh and Midland, Pa., to Ohio and West Virginia points.

From Lawrenceville and Robinson, Ill., to Indiana points.

From Evansville, Ind., to Illinois points.

From Louisville, Ky., to Ohio and Indiana points.

From Latonia, Ky., to Indiana and Ohio points.

From Ashland and Catlettsburg, Ky., and Huntington, W. Va., to Ohio points.

From Cabin Creek, W. Va., to Ohio points.

All destinations are described in the report as "areas, bounded by . . . . ", which gives the trucking company authority to haul to any points within the described areas, which, generally speaking, extend no further than 135 miles, straight-line, from origin points described.

In its report accompanying the order, ICC pointed out that:

10,000,000 Gallon Annual Traffic

"Applicant's officers, having conferred with representatives of 11 oil companies, which are said to control 75 per cent of the petroleum traffic in the considered territory, were advised of a prospective yearly movement of 10,000,000 gallons of petroleum products. The proposed operations are predicated upon the immediate, or prospective future, needs of these shippers.

"Representatives of five oil companies appeared at the hearing and testified at length as to their need for the proposed operations. These witnesses stated that the requirements of the industry demand the establishment of a comprehensive common-carrier highway service for the distribution of petroleum products, in addition to existing modes of transportation."

"It is admitted," ICC's report goes on, "that the prospective traffic, to some extent, will be diverted from rail carriers as a result of greater flexibility and other relative advantages of motor vehicles as a transportation agency where shorter hauls are considered. Witnesses for the protesting rail carriers testified concerning the existing railroad facilities. It is not necessary to analyze this testimony. Shippers and consignees of petroleum products are entitled to adequate service by motor vehicle as well as by railroad."

Equipment Described

Petroleum Transit's equipment is described in the report as "55 tractors and 55 trailers with tank bodies, having capacities of from 4000 to 4500 gallons." Some of the tanks, the report points out, "are divided into two or three compartments, permitting the handling of relatively small quantities of material."

The trucking company also engages in intrastate operations in most of the states covered in the order.

* * *

Interested Companies Listed

A check through transcript of the hearings on Petroleum Transit's application disclosed that the 11 oil companies referred to in the ICC decision probably were: Lubrite and White Star divisions of Socony-Vacuum Oil Co.; Pure Oil Co.; Shell Petroleum Corp.; Gulf Refining Co.; Cities Service Oil Co.; American Oil Co.; Canfield Oil Co.; Freedom Oil Works Co.; Atlantic Refining Co. and Ashland Oil & Refining Co.

Coffeyville Lube Plant Closed

CLEVELAND, Jan. 24. — National Refining Co. has closed down the bright stocks plant at its Coffeyville (Kansas) refinery and will supply its customers from stocks on hand, officials said today. As in the case of some other refiners whose plants have shut down, decision on reopening will depend on market conditions—whether or not it is more advantageous to buy or resume manufacturing, it was said.

Officials denied rumors in the Mid-Continent that the entire Coffeyville plant would be closed down.

Gas Conservation Rules Apply To Texas 'Distillate' Wells

N. P. N. News Bureau

TULSA, Jan. 23. — An order designed to eliminate the continuous controversy over classification of the so-called "distillate" wells has been issued by the Texas Railroad Commission.

The order defines a condensate well as one in which the liquids obtained at the surface are in the gas phase in the reservoir and are formed by the decrease in pressure and temperature which occurs when the gas leaves the reservoir, and states that such wells produce hydrocarbon liquids which are usually water-white in color and are not crude petroleum oil.

Wells which produce these hydrocarbon liquids are classified in the order as gas wells and the gas from them is to be restricted to the purposes provided for that type of well, except where the wells produce one barrel or more of crude oil per 100,000 cubic feet of gas production.

The order was issued after several months of research and a number of hearings. Some owners of the distillate wells had contended that they were oil producers, while the commission had sought to restrict the waste of the large volume of gas often "popped" to the air in the daily production of the condensate.

300 to 400 Wells

Commission engineers estimated that between 300 and 400 wells in Texas would be affected by the order, and that many of them either would be forced to provide repressuring facilities and return the gas to the producing horizon or find a legitimate market for it, or to restrict the well's production in accordance with the gas conservation law.

A large number of the distillate wells are located in the Gulf coast fields, and reports here late last week indicated that at least one large operator already had made plans to strip the gas of its "distillate" content and return the residue to the underground reservoir.

Another operator, James A. Patton and associates, have announced plans for a second gas recycling and gasoline plant for the Long Lake pool of Anderson county, after testing two distillate wells in the north end of the field.

Another company has asked the railroad commission for permission to recycle and repressure gas from its well to the 4800-foot level in the Agua Sulce field in Nueces county. The gas would be lifted from the 6400-foot level and processed before being returned to the 4800-foot sand.

The commission also has increased the gas allowance for oil wells in the Panhandle field from 500,000 cubic feet to 750,000 cubic feet per day. The gas-oil ratio is to be kept as low as possible, the order states; but in no event shall more than 750,000 cubic feet of gas be produced in one day while producing a well's crude oil allowable.

Predict Cal. Jany. Output 625,000 Bbls.

Telegraph Bulletin

LOS ANGELES, Jan. 23. — California daily average crude oil production for the week ended Jan. 20 was 632,210 barrels. San Joaquin Valley and Coastal fields underproduced their quotas by 7776 and 7119 barrels a day, respectively, while wells in the Los Angeles Basin contributed a total "excess" production of 41,990 barrels a day.

The central committee of California producers, scheduled to meet Jan. 27 to set the February crude quota, is expected to continue the 600,000-barrel figure recommended for January.

* * *

N. P. N. News Bureau

LOS ANGELES, Jan. 21.— The concentrated drive for greater compliance with the voluntary operators' program to curtail production throughout the state, points to an average daily crude production of about 625,000 barrels from California fields for January. This would be about 25,000 barrels a day less than the December average.

Although another 25,000 barrels a day must be lopped off the state's output before the voluntary proration goal of 600,000 barrels daily is reached, daily reports to the California oil umpire show producers up and down the state are making a real effort to bring output in line with estimated demand.

In the Long Beach field, where operators have agreed to a one-day shut-down of large producing wells by districts, various problems confronting the new program have been ironed out and during the past week 32,199 barrels were curtailed in the six districts, or about 10 per cent more than was shut in the previous week.

Districts Curtail

In District No. 1, 165 wells curtailed 5475 barrels and 55 small wells, allowed to remain open, produced 1175 barrels. District No. 2 showed 126 wells shut back 5355 barrels on the one-day "vacation," with 41 open wells producing 1295 barrels. In District No. 3, 78 wells curtailed 3350 barrels, 54 open wells produced 650 barrels. Shut-down of 234 wells in District No. 4 curtailed 10,065 barrels, with 106 small wells producing 935 barrels, and 181 wells in District No. 5 curtailed 6045 barrels during the one-day shut-down, with 98 open wells producing 3755 barrels.

District No. 6, added to the program a week ago, showed 47 wells curtailed 1909 barrels, and 182 open wells produced 6972 barrels.

At meetings of operators in San Joaquin Valley fields, called by the producers' executive committee, agreement was reached to curtail production of the Fruitvale and Mountain View fields to allowables set by the oil umpire.

Attacking along another flank, the fact finding committee, seeking to set up more equitable and acceptable proration machinery in California, called a meeting of operators in Ventura and Santa Barbara counties Jan. 24 to consider the possibilities of further curtailment in the Coastal fields.

California Owners Of 'Strippers' Unite

LOS ANGELES, Jan. 21.—In an effort to obtain more widespread recognition of their problems, owners of small output wells in the state have formed the California Stripper Well Assn. with offices in the Subway Terminal Bldg.

Richard Fenton, recently resigned from the Oil Producers Agency, has been authorized to direct their program.

Purpose of the new association is outlined as providing a medium through which stripper well operators will be able to present to the public, the government, and the rest of the oil industry the problems facing the small well operator.

Co-op To Build Cracking Plant

CHICAGO, Jan. 24.—License contract for operation of cracking and non-selective polymerization units under the Dubbs process has been signed by Howard A. Cowden, president of the Co-operative Refinery Assn. of North Kansas City. This company will build immediately a 1550-barrel per day cracking unit in northwestern Kansas as part of a 3000-barrel per day refinery, the announcement states.

The refining association is a subsidiary of the Consumers Co-operative Assn., an organization of some 400 or 500 companies operating bulk plants and service stations in ten middle western states. Adequate supplies of Kansas crude are assured, it is said, and a pipeline gathering system is a part of the project. The parent company was organized in 1929, and now reports assets of nearly $750,000. It compounds its own oils and greases, and its total sales amounted to more than $4,000,000 in the fiscal year ending Aug. 31, 1938.

L. M. Johnston, formerly superintendent of Sinclair's Parco, Wyo., refinery, will be in charge of refining operations.

Gas 'Overproduction In Texas Panhandle May Result in Suit

AMARILLO, Tex., Jan. 23.— Threat of suits for alleged violation of the state's sour gas proration orders was tossed at Panhandle producers at the gas proration hearing by the Texas Railroad Commission here Jan. 20.

Threat was made by Commissioner Ernest O. Thompson after testimony was introduced showing that a number of the operators had allegedly overdrawn their gas allowables — one of them by some 5,000,000,000 cubic feet — in the six-months between last July 1 and Dec. 31.

The commission failed to complete its hearing at Amarillo in one day and adjournment was announced to Jan. 30, at Austin.

LOS ANGELES, Jan. 21. — Plans are being made for the regular spring meeting of the Pacific Coast District, Division of Production, of the American Petroleum Institute, in Los Angeles April 11.

Bargains in Illinois Crude Heard in the Mid-Continent

N. P. N. News Bureau
By ALLEN S. JAMES

TULSA, Jan. 23. — The Mid-Continent has succeeded in readjusting its crude position fairly well to fit its own immediate marketing territory as Illinois took those markets east of the Mississippi, and this is proving a sturdy bulwark against the psychological effect on the price structure of the steadily increasing volume of Illinois oil being offered under the posted market.

Mid-Continent operators apparently are reconciled to the fact that, for the next two or three months at least, they will have to stay close at home while the Illinois storm either blows itself out or is brought under control with proration laws or some other means. Their major worry, meanwhile, is that the storm does not gain sufficient force to blow these lower crude prices across the Mississippi and down into the Mid-Continent refining area.

There already have been a few scattered gusts of that nature but not of sufficient force thus far to cause any damage.

One northeastern Oklahoma refiner, for example, has been offered a quantity of Illinois crude at 60 cents a barrel, while a large refiner on the Mississippi river has been offered crude at approximately 85 cents a barrel delivered at the plant, which gives a netback in the Illinois field of approximately 61 cents.

In Small Lots

Reports to company officials here last week, meanwhile, indicated that small quantities of Illinois crude had been offered as low as 40 cents in the field. These offerings, however, were for small lots and were due in most instances to the fact some small, independent producer had loaded a few more tank cars than he could sell immediately and accordingly had made an offer rather than pay demurrage on the cars.

Should those offerings become more general, however, Mid-Continent operators see the possibility that some refiners in the northeastern portion of the Mid-Continent, for a time at least, might be able to bring that crude into this territory by rail at a delivered cost slightly under that now prevailing for Mid-Continent crude.

That many Mid-Continent operators are preparing to settle down to wait for Illinois to become more stable as an oil producing district is evidenced by the fact that they are working among themselves to consolidate their operations. One company is known to have assigned a man to the sole task of working out these consolidations with other companies in the same pools in which that company operates.

The consolidations, in effect, are a trading of leases to eliminate duplication of activities in the same area. One company, for example, will take over the leases of another company in one area and operate the entire area as one unit, while turning to that other company its own leases in another area. Considerable savings in operating expenses are being affected by this plan, it was said.

The general crude picture in the Mid-Continent, meanwhile, has not changed materially in the past several days.

Globe Oil & Refining Co. Jan. 20 withdrew entirely as a purchaser in the Oklahoma City field but the 3000 barrels daily the company ceased buying was immediately purchased by Champlin Refining Co. at Enid, Okla.

National Refining Co. of Cleveland, operating a refinery at Coffeyville, Kans., made its pipeline proration more drastic when, on Jan. 18, it reduced its purchases in the stripper well areas of Oklahoma-Kansas 30 per cent.

The company last May had reduced its takings to 89-90 per cent of its former purchases, and since that time had been buying approximately 229,000 barrels a month. The 30 per cent reduction will bring the monthly purchases to approximately 170,000 barrels according to A. B. Ayling, in charge of the company's crude oil purchasing department at Bartlesville, Okla.

Cites Refinery Markets

"The continued weakness of the refinery market, and other conditions forces us to take this drastic step," Ayling wrote the producers from whom the company is purchasing oil.

Producers in the Bryson field, Jacks county, Texas, meanwhile, have been endeavoring to work out some means of marketing their oil when Continental Oil Co. ceases its purchases in that area Feb. 1. The company had announced it would cease purchasing the oil Jan. 15, but later agreed to continue as a buyer another 15 days while efforts were made by the producers to find markets.

Continental is leaving its gathering system intact in order to aid the producers, and one or two small refiners in the vicinity have indicated they will attempt to help out in this matter. One refiner is reported to have offered to purchase the crude at 10 cents under the posted prices. Continental was connected to 70 wells and was taking about 910 barrels of oil daily.

Output at Same Volume

Looking into the immediate future, most observers in the Mid-Continent are of the opinion production will be kept generally unchanged through February.

The Bureau of Mines has estimated market demand for Oklahoma crude during February at 482,500 barrels daily, but reports from Oklahoma City indicate the state's oil and gas conservation department will be willing to let the present allowable of 428,000 barrels daily carry over for another month. That figure would likely be acceptable to a majority of operators, as is indicated by the fact that, for the past two or three months, there have been no requests for either more or less allowable.

The Mid-Continent portion of Texas will certainly continue to operate on an unchanged allowable, since the Texas Railroad Commission's order of December was written to cover the first three months of 1939.

Just what will be done in Kansas remains to be seen but observers generally are of the opinion there will be little change in allowables until the impending reorganization of the corporation commission and its staff is completed.

Reports from Wichita late last week indicated that Kansas current crude production was running slightly ahead of the daily allowable of 153,900 barrels.

High Court Will Get 'Hot' Oil Law Appeal

N. P. N. News Bureau

WASHINGTON, Jan. 23. — Justice Department officials say an appeal will be filed soon with the U. S. Supreme Court from the decision of Federal District Judge Kennerly, who quashed indictments last month against Renne Allred and Neal Powers, charged with conspiracy to violate the Connally "Hot" Oil Law.

Producers Sponsor $1000 Essay Contest, Subject: Community's Benefits from Oil

N. P. N. News Bureau

TULSA, Jan. 21. — One grand award of $1000 and 18 state prizes of $100 each will be given by the Independent Petroleum Assn. of America to this year's high school seniors in the 18 oil and gas producing states who write the best essay on, "What Oil and Gas Have Done for My Community."

Announcement of the contest has been sent by Lawrence E. Smith, director of the association's petroleum research bureau, to superintendents of schools and to editors of daily papers in Arkansas, California, Colorado, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, Montana, New Mexico, New York, Ohio, Oklahoma, Pennsylvania, Texas, West Virginia and Wyoming.

The purpose of the scholastic award, President Charles F. Roeser of the association, explains, is to develop in greater detail than has ever before been done, the story of the part which oil and gas play in the economic and social life of the communities and states where they occur.

The contest closes June 30, 1939.

The association will require that the winner of the grand award use the money to carry on educational work in some college or university. No restrictions have been placed on use of the $100 awards.

Winner of the grand award will be invited to attend, with all expenses paid, the association's tenth annual convention at Fort Worth, Tex. next October and to read the winning essay to the convention.

February 'Gas' Demand 5% Larger, Forecast

N. P. N. News Bureau

WASHINGTON, Jan. 23.—Bureau of Mines forecasts that February motor fuel demand will be 33,400,000 barrels, 5 per cent larger than for February, 1938.

This comes on top of an estimated 3 per cent increase in demand for the current month over January 1938, making the two-month estimated demand approximately 4 per cent higher than in 1938.

To meet the February demand, Bureau of Mines estimates a daily average crude supply of 3,220,000 barrels, which is 1.5 per cent less than the January estimate and 4 per cent under February a year ago.

The Bureau explains that its estimate of crude demand will be lower "because the anticipated gasoline stock increase for February is only 4,500,000 barrels, compared with an actual increase of 5,904,000 barrels in February 1938; the gasoline yield is estimated as 44 per cent, compared with an actual yield of 42.8 per cent in February 1938, and because the forecast of crude oil for export, fuel and losses is lower."

The Bureau hedges a bit in its forecast of domestic motor fuel demand, with the explanation:

"The weather in February during the past 13 years has been the most variable of any month, and the variations have been most extreme. Such weather conditions add to the difficulty in estimating motor-fuel demand and may result in a difference of more than a million barrels in gasoline consumption either above or below normal."

Gasoline Exports Hold Up

The Bureau estimates motor fuel exports for February at 3,400,000 barrels, the same as the January estimate, which makes total motor fuel demand 36,800,000 barrels. The 4,500,000 barrel estimated increase in stocks brings this figure to 41,300,000, and a deduction for benzol and direct sales and losses of natural gasoline (1,100,000 barrels) brings the estimated refinery production for the month to 40,200,000 barrels.

This is distributed among the refining districts as follows:

District	Barrels
East Coast	5,220,000
Appalachian	1,330,000
Indiana-Illinois	7,120,000
Oklahoma	2,660,000
Kansas-Missouri	2,070,000
Texas Inland	2,830,000
Texas Gulf Coast	10,280,000
Louisiana Gulf Coast	1,220,000
North La.-Ark.	780,000
Rocky Mountain	1,050,000
California	5,640,000
Total U. S.	40,200,000

The Bureau estimates that about 6.5 per cent of total refinery production will be met with natural gasoline, or approximately 2,610,000 barrels. This leaves a straight-run and cracked production of 37,590,000 barrels. Application of the 44 per cent yield to this gives crude runs of 85,360,000 barrels. Foreign crude runs will make up 2,000,000 barrels of this.

The estimate for crude exports is 4,600,000 barrels, a drop of 1,200,000 from January's estimate, reflecting not only the shorter month, but according to the Bureau "a less optimistic view of importers."

Crude used for fuel and losses is estimated at 2,200,000 barrels.

Total demand for domestic crude thus reached is 90,160,000 barrels or 3,220,000 barrels daily.

Estimated Daily Average Crude Oil Demand by States*

(Supplied either from stocks and/or current production)

State	Forecast Feb. 1939	Forecast Jan. 1939	Actual demand Feb. 1938
Texas	1,297,500	1,332,900	1,316,000
California	580,000	588,400	651,000
Oklahoma	482,500	499,700	537,000
Louisiana	246,800	241,900	261,000
Kansas	148,600	153,900	163,000
Illinois	102,500	86,100	46,000
New Mexico	99,600	95,800	121,000
Wyoming	57,100	66,800	45,000
Arkansas	48,200	49,000	38,000
Michigan	47,200	47,400	56,000
Pennsylvania	43,200	42,300	49,000
Kentucky	17,100	17,100	14,000
New York	12,100	12,100	15,000
Montana	12,100	11,900	12,000
West Virginia	10,000	9,400	12,000
Ohio	9,000	9,100	4,000
Colorado	3,600	3,900	5,000
Indiana	2,900	2,900	3,000
Total U. S.	3,220,000	3,270,600	3,348,000

*As forecast by the U. S. Bureau of Mines; figures in barrels of 42 gallons.

Pennsylvania Crude Price Hiked 9-12c

N. P. N. News Bureau

CLEVELAND, Jan. 23. — The 9 to 12 cents advance in price posted for Pennsylvania grade crude, effective Jan. 21, was attributed to "general improvement in the statistical position of Pennsylvania crude," according to market observers. The three companies advancing prices, however, issued no formal statements.

Since the first of the year there had been a general lifting of the "pipeline proration", which had been in effect for several months, by South Penn Oil Co. (Joseph Seep subsidiary) in the Bradford, Pa. district and West Virginia, and by independent purchasers in the Bradford district.

Stocks of Pennsylvania grade crudes, according to Bureau of Mines reports, totaled 5,770,000 barrels on Dec. 31, down 389,000 barrels from Sept. 1 which was the date of a 12-cent reduction in prices of all grades of crude by the various leading purchasers.

Reports of the American Petroleum Institute show that production of Pennsylvania grade crudes averaged 69,800 barrels in the last four months of 1938 as compared with a daily average of 74,000 barrels during the previous four months of May to August, inclusive. At the same time, refinery runs of Pennsylvania grade crudes averaged 72,480 barrels during the four months of September to December, inclusive, as compared with 70,460 barrels daily in the previous four months, according to figures compiled by the National Petroleum Ass'n.

* * *

Crude Price Changes

PITTSBURGH—Effective Jan. 21, Joseph Seep Purchasing Agency, Tide Water Associated Oil Co., and The Pennzoil Co. advanced grades of Pennsylvania grade crude oil which they buy in amounts ranging from 9 cents to 12 cents per barrel.

Increases by Seep were 9 cents on crude in Southwest Pennsylvania Pipe Lines and in Eureka lines (West Virginia); and 12 cents in Buckeye lines (Macksburg, O. district), making new prices: $1.43 for oil in Southwest Pennsylvania lines; $1.37 for oil in Eureka lines; and $1.30 for oil in Buckeye lines. Corning was unchanged.

Tide Water's increase was 12 cents, making new price for Bradford-Allegany district, $1.80 per barrel.

Pennzoil's increase was 12 cents, making new prices $1.73 for Cochran, Franklin, Hamilton and Doolittle, in the lower Pennsylvania district, and ranging down to $1.68 for other lower district grades.

Last previous change by these companies on Pennsylvania crude was a 12 cent cut, Sept. 1, 1938.

* * *

PONCA CITY, Okla. — Effective Jan. 1, Continental Oil Co. revised prices it will pay for Abbeville, La. crude by placing it on a gravity basis and posting prices ranging from $0.92 for below 36 degrees, to $1.02 for 40 and above gravity. A 2 cent differential applies for each full degree of gravity. Price formerly was $1.01 flat for all grades.

* * *

PITTSBURGH, Jan. 24.—Joseph Seep Purchasing Agency today announced a 5-cent advance in price it will pay for Corning, O., crude to $1.02 per barrel. Last previous change was 10-cent reduction on Oct. 18, 1938.

Demand Cuts Fuel Stocks

N. P. N. News Bureau

NEW YORK, Jan. 24. — The American Petroleum Institute today reported a decline of 1,369,000 barrels in gas and fuel oil stocks and an increase of 1,703,000 barrels in gasoline stocks in the week ended Jan. 21. Crude runs and gasoline production were higher.

Last week was the tenth consecutive week in which gas and fuel oil stocks have declined, and most of the ten weekly reductions have been more than a million barrels.

Stocks of all gas and fuel oils totaled 141,091,000 barrels on Jan. 21. Inventories of gas oils and distillates dropped 612,000 barrels during the week ended that date, and, perhaps more significant was the even larger reduction — 757,000 barrels — in inventories of residual fuels, which indicated continuation of the revived industrial demand for heavy fuel oils. In the comparable seven-day period of January, 1938, stocks of residual fuel oils increased 658,000 barrels.

Despite the increase of 1,703,000 barrels in gasoline stocks last week, the upward trend still was not as rapid as at this time last year. In the seven-day period of Jan. 14-21 last year stocks increased 2,005,000 barrels. Stocks Jan. 21 this year totaled 75,455,000 barrels, as compared with 83,007,000 barrels on the same date last year.

Crude runs last week averaged 3,310,000 barrels daily, up 50,000 barrels from the previous week and 152,000 barrels higher in the comparable period last year.

Latest Oil Industry Statistics

Trends of Basic Figures

	Jan. 21	Jan. 14	Jan. 21, '38
Crude Production (Bbls. daily)	3,264,450	3,243,600	3,506,200
Crude Imports (Bbls. daily)	33,430	65,420	24,714
Crude Runs to Stills (Bbls. daily)	3,310,000	3,260,000	3,158,000
Gasoline Stocks (Bbls. total)	75,455,000	73,752,000	83,007,000
Gas & Fuel Oil Stocks (Bbls. total)	141,091,000	142,460,000	119,860,000

Cumulative daily average crude runs to refinery stills from Oct. 1 to Jan. 21 indicate 91,650,000 barrels of gasoline stocks next April 1, as against 82,500,0000 barrels estimated maximum economic requirements.

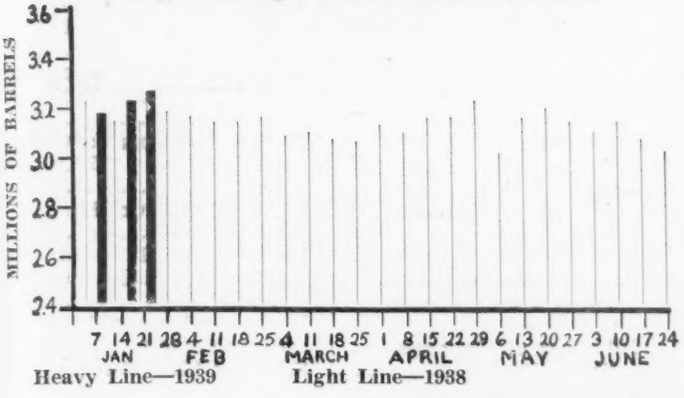
Total gas oil and fuel oil stocks were reduced 369,000 barrels in the week ended Jan. 21; in the corresponding week in 1937 they were reduced 184,000 barrels.

Crude Oil Production for the U. S.

(American Petroleum Institute figures)

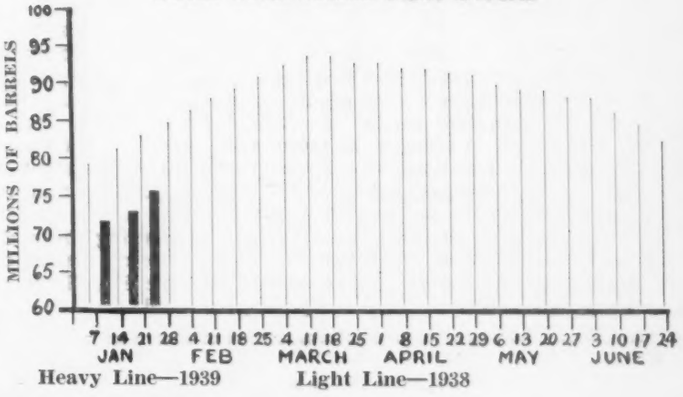
	Week Ended Jan. 21 Barrels	Week Ended Jan. 14 Barrels	Week Ended Jan. 7 Barrels
Oklahoma City	103,500	95,600	74,300
Total Oklahoma	426,950	420,950	402,700
Kansas	155,200	152,300	137,150
East Texas	372,200	372,000	371,950
Total Texas	1,290,250	1,275,300	1,292,900
Total Louisiana	260,250	266,450	261,950
Illinois (New pools)	136,600	123,000	121,350
California	632,200	629,600	624,700
East of Rockies	2,632,250	2,614,000	2,590,200
Total U. S.	3,264,450	3,243,600	3,214,900
Crude Imports	33,430	65,420	61,430
Total New Supply	3,297,880	3,309,020	3,276,330

Daily Average Crude Runs to Stills



Heavy Line—1939 Light Line—1938

Total U. S. Motor Fuel Stocks



Heavy Line—1939 Light Line—1938

A. P. I. Weekly Refinery Report

(Figures in Thousands of Barrels of 43 Gallons Each)

Districts	Per Cent Capacity	Daily Average Crude to Stills Week Ended Jan. 21	Daily Average Crude to Stills Week Ended Jan. 14	Per Cent of Reporting Capacity Operated Week Ended Jan. 21	Per Cent of Reporting Capacity Operated Week Ended Jan. 14	(a) Gasoline Production Week Ended Jan. 21	(a) Gasoline Production Week Ended Jan. 14	Stocks Total Finished and Unfinished Motor Fuel(b) Week Ended Jan. 21	Stocks Total Finished and Unfinished Motor Fuel(b) Week Ended Jan. 14	Stocks of Gas and Fuel Oil — Gas Oil and Distillates Week Ended Jan. 21	Stocks of Gas and Fuel Oil — Gas Oil and Distillates Week Ended Jan. 14	Stocks of Gas and Fuel Oil — Residual Fuel Oil Week Ended Jan. 21	Stocks of Gas and Fuel Oil — Residual Fuel Oil Week Ended Jan. 14	Stocks of Gas and Fuel Oil — Total Week Ended Jan. 21	Stocks of Gas and Fuel Oil — Total Week Ended Jan. 14
East Coast	100.0	494	462	80.3	75.1	1,424	1,346	17,871	17,789	5,154	5,364	6,687	6,861	11,841	12,225
Appalachian	85.9	101	99	78.9	77.3	379	363	3,099	3,116	244	260	533	527	777	787
Ind., Ill., Ky.	89.5	449	423	87.4	82.3	1,842	1,745	12,292	11,783	3,257	3,326	3,730	3,781	6,987	7,107
Okla., Kans., Mo.	81.6	241	245	70.5	71.6	(c)855	(c)857	6,777	6,560	1,263	1,319	3,027	3,040	4,290	4,359
Inland Texas	50.3	124	117	78.0	73.6	543	517	1,780	1,644	348	361	1,631	1,614	1,979	1,975
Texas Gulf	89.5	838	846	93.6	94.5	2,539	2,580	10,472	9,964	3,957	4,054	6,366	6,550	10,323	10,604
La. Gulf	97.3	137	123	94.5	84.8	277	261	2,196	2,233	1,048	1,048	800	992	1,848	2,040
No. La., Ark.	55.0	45	41	81.8	74.5	129	127	483	468	315	368	568	568	883	876
Rocky Mt.	54.2	44	40	68.8	62.5	211	231	1,454	1,387	142	141	556	553	698	694
California	90.0	480	509	64.4	68.3	1,463	1,549	14,261	14,188	10,521	10,660	87,644	87,803	98,165	98,463
Total Reporting	85.8	2,953	2,905	80.6	79.3	9,662	9,576	70,685	69,132	26,249	26,841	111,542	112,289	137,791	139,130
U. S. Total (d)		3,310	3,260					75,455	73,752	27,009	27,621	114,082	114,839	141,091	142,460
U. S. Total, 1-21-38 (d)		3,158						83,007		21,873		97,987		119,860	

(a) Includes straight-run, cracked, and natural blended.
(b) Includes stocks at refineries, in bulk terminals, pipe lines and in transit.
(c) 12% of reporting capacity in this district did not report gasoline production.
(d) Estimated, U. S. Bureau of Mines basis

Crude Stocks Drop

By Teletype
N. P. N. News Bureau

WASHINGTON, Jan. 24. — Stocks of refinable crude petroleum on Jan. 14, totaled 271,819,000 barrels, a decrease of 506,000 barrels from the Jan. 7 figure, Bureau of Mines reported today. The decrease in domestic stocks was 767,000 barrels, but foreign stocks increased 261,000 barrels. Stocks on Jan. 15, 1938, nearest comparable date a year ago, were 303,679,000 barrels. A tabulation of stocks by grade or origin, showing weekly changes, is printed on this page.

To Speed Up Oil Leases

WASHINGTON, Jan. 23. — To speed up the exchange of oil and gas prospecting permits for five-year leases on public lands, the Interior Department has arranged for preliminary adjudications to be conducted at district land offices instead of at headquarters in General Land Office here.

Weekly Changes in U. S. Crude Oil Stocks*

(Thousands of Barrels)

Grade or Origin	Dec. 31	Jan. 7	Jan. 14	Chg. from Jan. 7
Pennsylvania grade	5,770	5,831	5,842	+ 11
Other Appalachian	1,210	1,241	1,250	+ 9
Lima-Michigan	1,434	1,432	1,429	— 3
Illinois-SW Indiana	11,332	11,634	11,615	— 19
Arkansas	3,058	2,669	2,914	+245
Kansas	6,790	6,726	6,862	+136
Louisiana	13,445	13,761	13,553	—208
Northern	5,342	5,417	5,351	— 66
Gulf Coast	8,103	8,344	8,202	—142
New Mexico	7,176	7,034	7,063	+ 29
Oklahoma	70,718	70,422	70,147	—275
Texas	90,989	90,210	89,478	—732
East Texas	18,980	19,007	18,938	— 69
West Texas	17,137	16,981	17,059	+ 78
Gulf Coast	19,881	20,015	20,000	— 15
Other Texas	34,991	34,207	33,481	—726
Rocky Mountain	20,590	20,665	20,774	+109
California	37,249	37,370	37,301	— 69
Foreign	3,263	3,330	3,591	+261
Total U. S. Refinable	273,024	272,325	271,819	—506
Heavy in California	16,699	16,382	16,705	+323

*Compiled by U. S. Bureau of Mines.

DEATHS

Walter L. Sidwell

WINFIELD, Kan., Jan. 20.—Walter L. Sidwell, aged 57, oil operator, died suddenly here Jan. 19. He had lived here for several years and was widely known in Kansas oil circles. He was one of the discoverers of the Hugoton gas field in southwestern Kansas.

* * *

J. A. Smith

TULSA, Jan. 19.—J. A. Smith, formerly a drilling contractor here, died at Muskogee, Okla., Jan. 18. He was 60 years of age. Mr. Smith came to Tulsa from Parkersburg, W. Va.

* * *

"Jack" Kilgore

OKLAHOMA CITY, Jan. 19.—E. P. "Jack" Kilgore, oil operator here and discoverer of several pools in Texas and Louisiana, died suddenly here Jan. 18. He was 53 years of age. Among the fields he opened were the Kilgore pool in southern Oklahoma and an extension of the Zwolle pool in Sabine county, Louisiana.

Arthur D. Robinson

DALLAS, Jan. 16.—Arthur D. Robinson, aged 56, independent producer, died at his home here of heart trouble Jan. 13. Burial was at Kaufman, Texas.

AdverseRulingGiven In Premium Case

N. P. N. News Bureau

LOS ANGELES, Jan. 21. — Efforts by the Retail Petroleum Dealer Ass'n. to use the California Unfair Practices act to stop free gifts of pottery and other premiums at service stations, ran into another obstacle last week when a Los Angeles court issued an adverse ruling.

In deciding a test case brought by the association against Grover James, a Los Angeles station operator, Superior Judge Beardsley Jan. 20 dismissed the charge, with the opinion that the defendant, in giving away pottery with the sale of gasoline, did not act with intention of injuring the plaintiffs — neighboring station operators. The decision will be appealed, it is said.

Coming Meetings

Ohio Petroleum Marketers Assn., Deshler-Wallick Hotel, Columbus, Feb. 7, 8, 9.

Illinois Petroleum Marketers Assn., annual convention, Pere Marquette Hotel, Peoria, Ill., Feb. 8-10.

Kansas Oil Men's Assn., 25th Anniversary, Wichita, Kan., Feb. 13, 14.

American Institute of Mining and Metallurgical Engineers, Engineering Societies Bldg., New York, Feb. 13 to 16.

Kentucky Petroleum Marketers Assn., 13th annual meeting, Brown Hotel, Louisville, Feb. 14, 15.

Assn. of Highway Officials of North Atlantic States, 15th annual meeting, Hotel Pennsylvania, New York, Feb. 15, 17.

Liquefied Petroleum Gas Assn., Inc., annual meeting, Hotel Biltmore, Oklahoma City, Okla., Feb. 20-22.

Wisconsin Petroleum Assn., annual meeting, Schroeder Hotel, Milwaukee, Feb. 21, 22, 23.

American Society of Mechanical Engineers and Louisiana Engineering Society, joint meeting, St. Charles Hotel, New Orleans, Feb. 23, 24, 25.

North Texas Oil & Gas Assn., annual meeting, Wichita Falls, Tex., Feb. 25.

12th National Asphalt Conference, auspices The Asphalt Institute, Biltmore Hotel, Los Angeles, week of Feb. 27.

Iowa Independent Oil Jobbers Assn., Hotel Fort Des Moines, Des Moines, March 1, 2, 3.

American Society for Testing Materials, committee week and regional meeting, Deshler-Wallick Hotel, Columbus, O., March 6-10.

Indiana Independent Petroleum Assn., spring convention and refiners' and suppliers' exhibit, Hotel Severin, Indianapolis, March 14-16.

American Petroleum Institute, Division of Production, Southwest District, Plaza Hotel, San Antonio, March 16, 17.

Western Petroleum Refiners Assn., annual meeting, San Antonio, March 20 to 22.

Oil Trades Assn., of New York, annual meeting, Waldorf-Astoria Hotel, New York City, March 21.

American Assn. of Petroleum Geologists, Oklahoma City, Okla., March 22, 23, 24.

American Chemical Society, Baltimore, Md., April 3-7.

American Petroleum Institute, Division of Production, Pacific Coast Section, Hotel Biltmore, Los Angeles, April 11.

National Petroleum Assn., 36th semi-annual meeting, Hotel Cleveland, Cleveland, O., April 13, 14.

Oil-World Exposition, Houston, Tex., April 24 to 29.

American Institute of Mining & Metallurgical Engineers, Open Hearth Conference, Cleveland, April 26, 27, 28.

Petroleum Electric Supply Assn. and Petroleum Industry Electrical Assn., Rice Hotel, Houston, Tex., May 2-4.

Natural Gasoline Assn. of America, Hotel Tulsa, Tulsa, May 3-5.

American Institute of Chemical Engineers, Akron, O., May 9-11.

American Petroleum Institute, 9th mid-year meeting, Roosevelt Hotel, New Orleans, La., May 15 to 18.

World Automotive Engineering Congress, sponsored by S.A.E., for New York, May 22-26; Indianapolis, May 30; Detroit, May 31-June 2; San Francisco, June 6-8.

Pennsylvania Grade Crude Oil Assn., annual meeting, Hotel Hershey, Hershey, Pa., June 15, 16.

13th International Congress of Carbide, Acetylene, Oxy-Acetylene Welding & Allied Industries, Munich, Germany, June 25 to July 1.

American Society for Testing Materials, 42nd annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26 to 30.

Independent Petroleum Assn. of America, 10th annual meeting, Ft. Worth, Tex., Oct.

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Is Motor Industry's Chestnut

By M. G. Van Voorhis

BEING purely a problem which has accompanied the change in design of automotive engines to higher speeds and pressures, as well as to smaller clearances between moving parts and quite possibly to higher local temperatures, the automotive engineers will have difficulty in passing the responsibility for the so-called "varnish" deposition in modern engines on to the oil industry. Particularly when, as pointed out in the open discussion of this problem at the recent SAE meeting in Detroit, progress in the manufacture of lubricating oils in the last 10 years has prevented the lacquer problem from becoming more serious than it is today.

While it is true that hundreds of lubricating oil additives have been developed for the purpose of further improving the ability of the oil to resist higher and higher pressures which are being demanded by the automotive industry, as well as to improve stability, oiliness characteristics and the viscosity index and to prevent bearing corrosion, oil chemists and automotive engineers alike know that unpredictable reactions may result when new oils are first exposed to actual service conditions, no matter what the experience has been in testing laboratories.

The possibilities that are open to automotive engineers in engine adjustments to correct the detonation problem, as shown by Shell engineers Hebl and Rendel, at the same SAE meeting, give some idea of the effect of small changes in engine variables upon actual performance, and may indicate similar possibilities in correcting the "varnish" problem. At best it should be a co-operative problem between the two industries, in which the approach is with open-mindedness.

An automotive engineer said in presenting a symposium of opinion on the subject at Detroit: "It would seem that proving the parentage of the child is of less importance than that we have the child, in view of which co-operation from all quarters is indicated as the best attack." Too zealous interest on the part of the oil company chemists and engineers, however, might be taken to indicate some responsibility for the parentage.

Must Double as Economist

Closer interdependence between the refiner's economic problems and his technical problems are being recognized, and the successful plant operating head of the future will probably be a pretty good rule-of-thumb economist as well as a highly trained operating man; conceivably, the relationship might even be reversed.

In an analysis of the general petroleum situation recently made by Fred Van Covern, director of the department of statistics of the American Petroleum Institute, this economist ventures into what might be termed the refinery operating field. "Does the industry accept furnace oil as a principal product?" he asks. "Does furnace oil now share that distinction with gasoline?

"If so, why wouldn't it be good operating practice to build up stocks of light fuel oils in the summer, as gasoline inventories are built up in the winter, thereby making it unnecessary to produce them as currently required, with the resultant uneconomically large production of gasoline?"

"Of course, the economic worth of cracking stock in the gasoline or light-fuel market is the important factor," he continues, "but the advent of furnace oils to a position of prominence would seem to carry with it the responsibility of returning to refiners a greater portion of the cost of the raw material, thereby making it desirable to pass so-called cracking stock into the light-fuel-oil market, rather than to convert it all into gasoline."

It seems safe to assume that Van Covern continues to place the heavy fuel oils in the class of a by-product which cannot hope to carry a proportionate share of the refiners' operating costs and the production of which should be avoided as far as possible in plant operations. He recognizes a problem of some difficulty in balancing light-fuel-oil production and inventories with economic gasoline requirements because of a complete lack of relationship between demand for these two products.

"It is interesting, in this connection, to observe that the new refining processes now being made available to the industry promise considerably greater flexibility as to yields," he observes, "and, therefore, a partial and perhaps ultimately, a complete solution to the problems involved in this phase of the industry's operations."

●

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Colloidal-Graphited Lubricants and Graphoid Surfaces by Raymond Szymanowitz .. R-28

Improved performance of lubricating oil containing colloidal graphite is shown to be due to a greater affinity of oil for graphite or a graphod surface than for naked metal.

Control of Wax Distillate Quality by J. W. Donnell—Part 4 ..... R-34

Distillation range and quality of fractionation control the factors which determine the pressability of a wax distillate. These factors are viscosity, wax content, and crystal structure of the wax.

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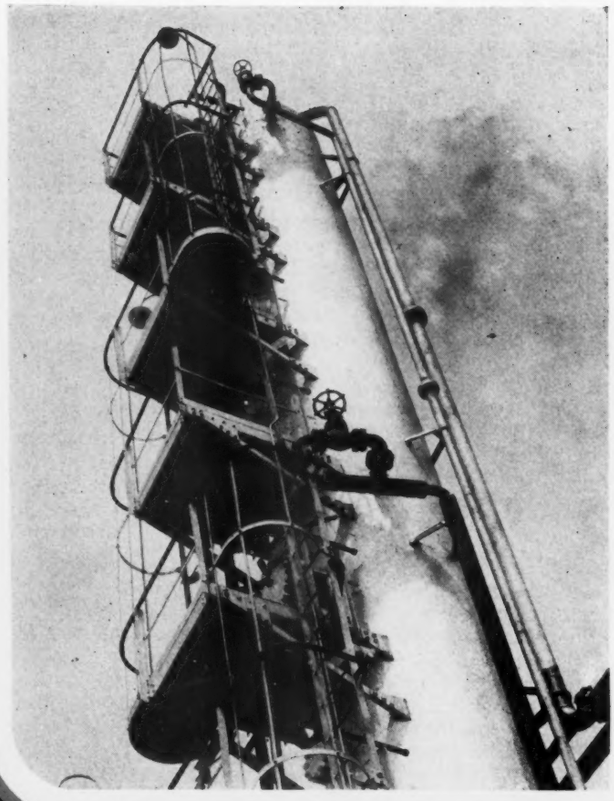
Report on SAE Meeting

Because of the wide interest among men in the marketing branch of the oil industry, as well as in the refining division, in the proceedings and discussions at the annual meeting of the Society of Automotive Engineers in Detroit Jan. 9-13, the report on that meeting, which was attended by Arch L. Foster, Technical Editor of NATIONAL PETROLEUM NEWS, is published in the general section of this issue, starting on page 21.

This report takes up in detail the discussion of the "varnish" deposition in today's automotive engineers as in part at least a lubricating oil problem; important contributions to the detonation problem, as contributed by two oil company engineers; and cautions in the use of oil filters.

Refining Technology



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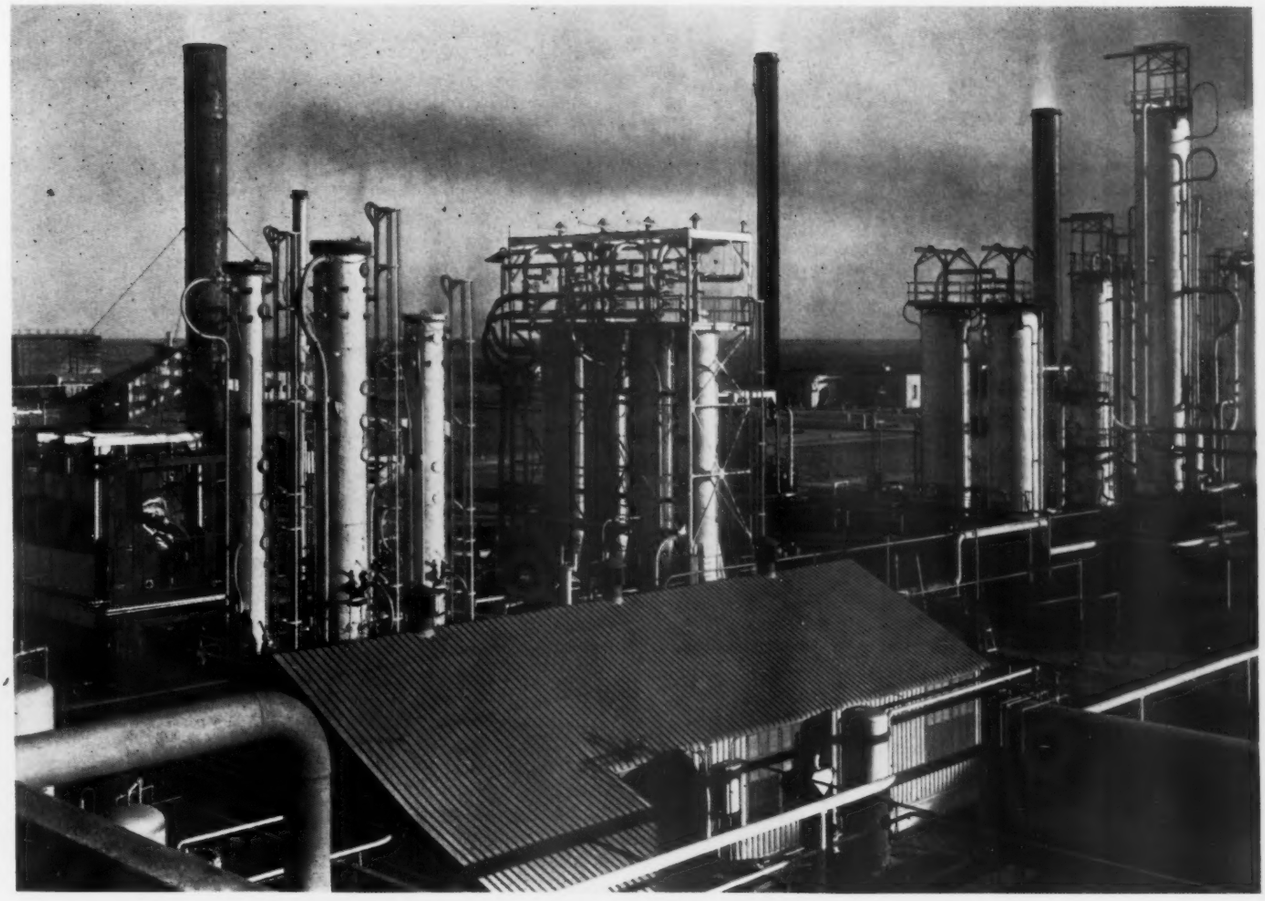


Process area of Shamrock Oil Oil & Gas Corp.'s new cracking and polymerization installation in the Texas Panhandle. The cracking plant is designed to operate on alternate charging stocks of sour crude produced from nearby wells, or on topped crude from a skimming plant near Lefors, Gray County. It was built by Arthur G. McKee & Co.

Petroleum Industry Rated Leader in Instrumentation

CLEVELAND—The petroleum industry is rated at the top in the purchases of industrial instruments for indicating, recording, and controlling processes, according to a report issued by the Works Progress Administration. A national research project on "Industrial Instruments and Changing Technology" has just been completed by the WPA to determine "re-employment opportunities and recent changes in industrial techniques."

Sharing the leading positions in the extent of application of instrumentation to industrial processes are central and industrial power plants, iron and steel industry, automotive industry, and machine and hardware industry. The last three industries are grouped together for a total of 26.5 per cent as compared with 16.3 per cent each for petroleum and power industries. These percentages apply only to the year 1935 and should be considered only roughly accurate, it was pointed out.

The widespread introduction of measurement devices and automatic devices and automatic control instruments in industry has speeded up production, improved the quality of products, reduced costs, and increased the productivity of labor, the report shows. Although industrial instruments have been found in some instances to have displaced labor and skill, their advantages were found to outweigh this social disadvantage by promoting the development of new services, products, and industries.

It is pointed out that in the petroleum cracking process instruments have played a critical role in the development and in making the process commercially practical.

Direct reference is made to several of the 20 NATIONAL PETROLEUM NEWS articles of the past 15 years which are listed in an extensive bibliography of industrial instrumentation.

The feasibility of using controllers in various stages of petroleum refining was not fully recognized even as late as 1927, the report quotes Luis de Florez from an N.P.N. article in February of that year.

A survey by NATIONAL PETROLEUM NEWS of a number of refinery installations in 1935 is abstracted to show savings to refiners. The survey was made by John W. Thompson, N.P.N. staff writer, and published March 27, 1935, issue of N.P.N.

The report (No. M-1) is in the form of a book of 148 pages, illustrated, and with numerous charts and tables. It was prepared by George Perazich and associates under the direction of David Weintraub. Requests for copies should be addressed to Publications Sections, Division of Information, Works Progress Administration, Washington, D. C.

Catalysis Symposium To Feature A.C.S. Meet

CLEVELAND, Jan. 16.—A symposium on catalysis is a leading feature of the Petroleum Division program of the American Chemical Society meeting in Baltimore, April 3-7. Dr. Hugh S. Taylor, chairman of the symposium, has outlined an eight-section program covering alkylation, catalytic cracking, catalytic stabilization of hydrocarbons, cyclisation, dehydrogenation, hydrogenation, isomerisation, and polymerization. Each section will include an introductory paper, two or three shorter papers, and time for discussion.

The division dinner will be on the same day, April 4. Dr. V. N. Ipatieff, guest of honor, will speak on The History of Catalysis in Petroleum Chemistry. The general meeting of the division will be April 5.

The division of industrial and engineering chemistry will co-operate in the symposium and in turn the petroleum division will co-operate in a symposium on thermal insulation on April 6.

Colloidal-Graphited Lubricants And Graphoid Surfaces

By Raymond Szymanowitz*

In this article the author accounts for the ability of pure graphite to function as a dry lubricant by its peculiar crystalline structure. He discusses studies of metal surfaces and films formed thereon with the aid of the electron diffraction camera and tells how investigators with this scientific tool have proved the existence of the "graphoid surface".

The important bearing this surface has on improving conditions of lubrication is explained in detail. The marked improvement in performance of mineral oil containing colloidal graphite is said to be due in part to a markedly greater affinity of oil for graphite than for naked metal, as shown by determinations of heats of wetting.

Further discussion on the subject of colloidal-graphite lubricants by the same author are being arranged to appear in later issues of Refining Technology.

CERTAIN solid bodies such as graphite, talc, soapstone and mica have long been utilized as solid lubricants. Graphite, however, because of its softness and unusual greasiness, coupled with its chemical inertness, is the most important substance of this group.

Graphite was originally employed as a powder on rubbing surfaces composed of wood, where oil or other fluid bodies are likely to be absorbed; on lace-making machines where oil might cause staining of the fabric; on certain machines used in the food industry where the product being processed is subject to contamination with oil, and in a variety of devices operating at temperatures which have a detrimental effect upon oil.

Inasmuch as graphite is capable of serving as a lubricant only and is in nowise a coolant, its use in powder form must be confined to applications where the speeds and pressures are relatively low.

Graphite is found in nature as a dark gray crystalline material, having a specific gravity ranging from 2.1 to 2.4. It is an allotropic form of carbon, highly resistant to oxidation, withstanding conversion to carbon dioxide at temperatures up to approximately 600° C. (1100° F.) It is not attacked by the free halogens and is insoluble in all acids and alkalis.**

Natural graphite, unfortunately, is intimately associated with certain silicous bodies of an abrasive nature which are difficult of removal because of the similarity existing between their specific gravities and that of graphitic carbon. Refining processes, nevertheless, are steadily improving.

Electric-furnace graphite, on the other hand, synthesized from carefully chosen raw materials, is available in a very high degree of purity. Material of this kind is well suited for lubricating applications where the absence of gritty foreign bodies is paramount.

It has been found that pure graphite, when applied to friction surfaces, either as a dry powder or when incorporated with grease, improves the appearance of shafts and bearings and is an effective wear reducer. Its beneficial action has been ascribed to its ability to fill in the minute cavities which comprise even the most carefully machined surfaces. Graphite, it is interesting to note, particularly when used with fluid lubricants, is more than a surface leveller.

*Acheson Industries, Inc., New York.

**Graphite is, however, slowly attacked by powerful oxidizing mixtures such as potassium chlorate and concentrated nitric acid which convert it into graphitic acid.

Structure of Graphite Crystal Explains Lubricating Action

In the course of their researches involving the determination of crystal structure through the medium of the X-ray, Debye and Scherrer[1] found that graphite crystallizes in a hexagonal system like that shown in Fig. 1. All of the atoms comprising the hexagons in a single plane are in close proximity to each other and, therefore, are bound together to form a strong layer. Because of the greater distance existing between the atoms in adjacent planes, a lesser affinity exists between the separate layers, resulting in a crystal of lamellar structure which yields to easy shear parallel to the plane of the hexagons.

A graphite crystal might be compared to a deck of playing cards in which a single card represents a layer of hexagons as depicted above. If a downward and sideward pressure is exerted on the deck, the cards will slide one over the other in a manner not unlike that in which the laminations or layers in a crystal of graphite slide to give rise to the unctuousity or greasiness for which this substance is noted.

Not until Acheson[2] discovered a means of colloidalizing*** graphite was it possible to successfully employ solid lubricants with fluid bodies other than fairly stiff greases.

***A substance which has been rendered colloidal has particles not so fine as those comprising true solutions. They are, on the other hand, many times smaller than the particles constituting coarse suspensions.

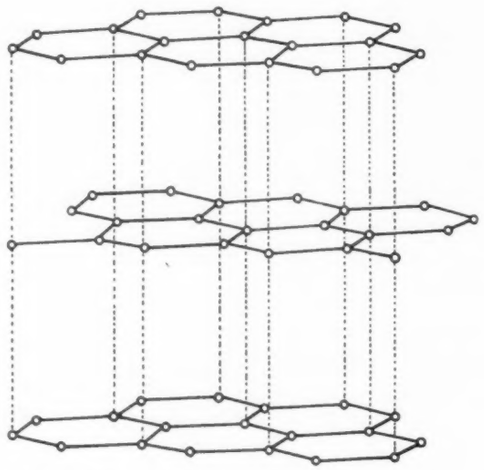
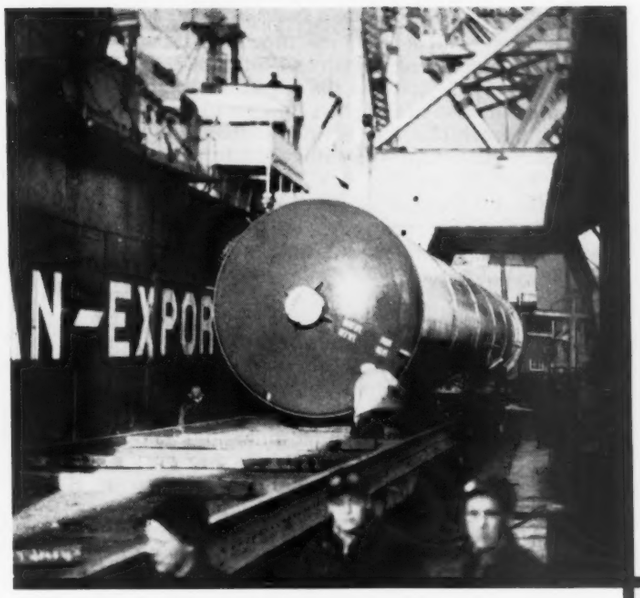


Fig. 1. The arrangement of carbon atoms in a graphite crystal. The atom planes or "layers" slide over each other when subjected to outside forces thus giving graphite its ability to function as a dry lubricant



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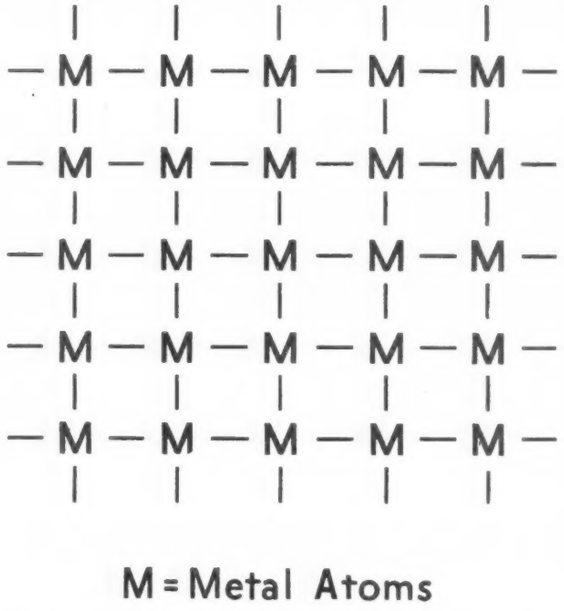


Fig. 2. Metals, like other solid bodies, are held together by binding forces other than those exerted by the primary valence of the component elements. These secondary forces acting at the outermost parts of a substance are responsible for "surface energy"

However, by reducing the particle size of his electric-furnace graphite to a point where it assumed an electric charge and exhibited Brownian movement, Acheson was able to suspend graphite in both oil and water, making possible the use of such graphited liquids in circulating systems which had been designed for plain oil only.

Colloidal graphite suspended in oil is capable of remaining with its carrier under many adverse conditions, giving it properties approaching those of a substance in true solution. When it is realized that the graphite particles are for the most part less than 1 micron (.00003937 in.) in size, it will be appreciated that the closest fitting parts in machine practice have tolerances many times greater than the largest graphite particle. Accordingly, there is no possibility of these parts exerting a filtering action. The truth of this remark is confirmed by the failure of the capillaries in a wick to separate colloidal graphite from oil media.

The Graphoid Surface

When colloidal-graphited oil is consistently employed in a mechanical device, there is a marked reduction of wear. Bearing surfaces take on a fine finish and reductions in power consumption are evident. These benefits are not the result of any "oil thickening" (since only something of the order of 0.2% graphite is usually employed) but to the ultimate adsorption of some of the graphite by the friction parts to form what is known as a "graphoid surface."

It is generally accepted that matter is held together by forces other than those associated with the primary valence of the elements. Langmuir has made an extensive study of these forces, which he regards as secondary valence, and has published[3] certain deductions which do much toward explaining the mechanics of cohesion, adhesion and adsorption.

The distribution of secondary valence forces in a metal may, for the purposes of this discussion, be shown graphically as in Fig. 2. Each atom possesses an affinity not only for neighboring atoms in the same plane but also for those in adjacent planes. It will be observed that the surface atoms, unlike those making up the balance of the solid, are not capable of exercising their valence bonds to the fullest extent. Consequently, those unsatisfied bonds which radiate from the surface create a stray field and are responsible for what is termed "surface energy." Even particles of colloidal graphite (which have a large surface for their mass) are rich in surface charges. Accordingly, when graphite is adsorbed to a metallic surface, the surface forces of both the graphite and metal become partially, if not completely, satisfied to form a bond of great tenacity.

Hardy[4] states that "the function of a lubricant is to reduce the energy of the surface and thereby to reduce the capacity for cohesion and the resistance to slip when two composite surfaces are applied the one to the other." Adsorbed graphite exhibits one of the fundamental properties of an efficient lubricant—the ability to saturate the surface forces of a shaft or bearing.

Hardy[5] is likewise the authority for the view that the friction of two clean surfaces is due not so much to their inequalities but to the adhesion between them. This investigator points out how a film of oxide or sulfide on a surface of copper is highly effective as a lubricant because of the lowering of the surface energy of the copper. He believes[6] that the adsorption of a lubricant by a solid is a factor of prime importance, the better lubricant being the one which is more tenaciously adsorbed.

Mabery[7] as early as 1913 had adopted the stand that the efficacy of colloidal-graphited lubricants depended upon the adsorption of graphite by the friction surfaces. He said, "in the use of colloidal graphite as a lubricant it appears that by reason of the tenuity or fineness of its particles, it is capable, under the conditions of lubrication, of penetrating the porous surface of metals and coming into such close contact in their intermolecular structure, of approaching a condition of graphite combination."

A graphoid surface is not readily detectable by ordinary means. Although its presence is manifested by the beneficial effect it produces in practice, it is not possible to determine its presence or absence by mere visual inspection. The existence of such surfaces, neverthless, have been proved by friction tests, by microchemical analysis, and with the aid of the electron diffraction camera.

MATTHEWS and Wolf of the Imperial College of Science and Technology (London), in a series of carefully conducted experiments in which the Pregl methods of microchemical analysis were followed, found:

"When a steel journal is run in a plain annular bearing lubricated with mineral oil to which a small proportion of high grade colloidal graphite has been added for a sufficient length of time to establish a 'graphoid surface', the presence of graphite in the latter can be detected by microchemical analysis, all 'free' and 'mechanically removable' graphite having first been wiped and washed off.

"A surface 'skin' of the steel about 0.001 cm. thick will contain about 0.01% by volume of absorbed or retained (as distinct from indigenous or inherent) graphite, and the thickness of the graphite film, if spread in a continuous and uniform layer on the perfectly smooth metallic surface would be about 1×10^{-7} cm.

"The above 'graphoid surface' will contain about ten times as much adsorbed oil (by volume) as adsorbed graphite and the thickness of the oil film thus adsorbed will be about ten times that of the graphite film, making the same assumptions concerning distribution, etc. as before.

"The surface of a steel journal run under as nearly as possible similar conditions but lubricated with the plain instead of the graphited oil gave no indication of the presence of irreversibly adsorbed oil when tested by microchemical methods, all 'free' oil having first been removed by thorough washing with solvents. It would appear, therefore, that the presence of colloidal graphite is necessary for oil adsorption of the irreversible type to take place.

"The excellent friction-reducing properties of metallic rubbing surfaces which have been 'run-in' with colloidal-graphited mineral lubricating oils would appear to be due to the gradual adsorption by these surfaces of a graphite and oil layer (a 'graph-oleo' film) which acts as a protective against excessive abrasion and 'pick-up' and as a 'boundary lubricating film'. This 'graph-oleo' layer is much richer in graphite than the main body of the graphited oil, for whereas the latter may only contain some 0.2 to 0.3% of colloidal graphite, the graphite content of the adsorbed 'graph-oleo' film may be as high as 33% by weight."

Electron Diffraction Camera Detects Graphoid Surface

Finch and his co-workers have made numerous investigations of graphoid surfaces with the electron diffraction camera. Electron diffraction procedures differ from X-ray methods in that electrons, being poor in penetrating power, are ideal for surface explorations. The fundamental principle upon which this rather new tool functions, involves the impingement of a beam of electrons upon the surface under observation (See Fig. 3). The manner in which the beam is deflected serves to reveal the way the atoms making up the surface are oriented.

It is well known that the cast iron motor blocks of internal combustion engines carry a rather high percentage of free graphite. This occlusion, when made a part of a surface by machining or through abrasion, is highly effective in reducing wear. This is especially the case during the running-in of new engines when the graphite crystals embedded in the cylinder surfaces are, by the rubbing action of the piston, smeared over the walls to provide a self-lubricating film.

The electron diffraction camera is capable of not only revealing the presence of graphite, but can at the same time show whether the graphite crystals are placed at random on a surface or whether they lie in a single plane.

Finch in collaboration with Zahoorbux[9] comments on this subject with relation to the use of colloidal-graphited lubricants in the following words:

"The presence of graphite in cast iron accounts for its self-lubricating properties, but in certain cases this graphite supply is inadequate and can only be replenished by the opening of fresh pores as the result of wear, unless an external source of graphite is furnished. Indeed, it has become usual to add small amounts of colloidal graphite to the lubricating oil for graphite-free metals as well as for cast iron. An orientated graphite layer is soon formed on a bearing surface run-in with such a graphitized oil. The authors have found that a bearing, neither of whose elements is cast iron, but which has been lubricated with graphitized oil, can run without damage or seizure in a dry condition for a much longer period than one previously lubricated only with plain ungraphitized oil. Since under normal running conditions the oil film at some point or other continually undergoes momentary rupture, the chief function of the graphite is to prevent 'pick-up' during these brief periods of oil-film breakdown."

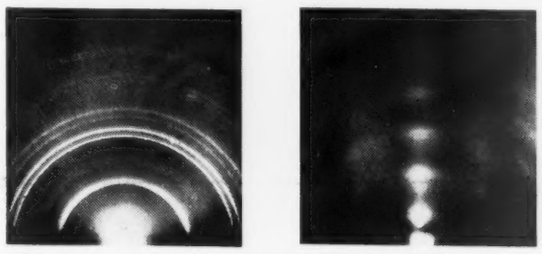
Figures 4 and 5 are typical patterns obtained with the electron diffraction camera. Figure 4 represents the result obtained when graphite particles are placed at random on a surface. The beam is deflected in all directions to produce the concentric circles shown. In Figure 5, however, where the particles are oriented and lie flat like shingles on a roof, the beam is deflected much like light is reflected from a smooth surface and terminates on the sensitized plate of the camera in a row of vertical spots.

Graphoid Surfaces Readily Wetted by Oil

Another characteristic of graphoid surfaces is the affinity they possess for petroleum bodies. Bachmann and Brieger[10-11] in studies involving the relationship between heat of wetting and lubricity, found that the heat generated when oil wets graphite is 7 to 10 times the value obtained with copper and oil. From test data obtained in this work they make the following interesting observations:

"With respect to graphite practically all the oils that were examined (both good and poor lubricants alike) show without exception equally high heats of wetting. This then is a means of measuring how much the lubricating ability of a pure oil which is deficient in this quality, may be enhanced by means of the admixture of graphite. In addition to this, graphite is able to improve considerably the lubricating oils as was shown most clearly in the measurements of heats of wetting. The values for the heats of wetting show that the more deficient an oil is originally in lubricating ability, the greater is the relative increase in lubricity upon admixture of graphite. The addition of graphitic carbon, therefore, exerts an equalizing influence on lubricating oils used in industry, according to the investigation under consideration, because as far as lubricity is concerned, it brings them all to the same level. However, this level is higher than that for any lubricating oil containing no admixture of graphite.

"The addition of graphite causes, first of all, the formation of a thin coating of the same upon shaft and bearing. Because of its oleophile (superior wetting ability toward oil) this graphite layer forms a thin adherent and indestructible oil film which is the prerequisite for good lubricating effect and conservation of oil. The nature and also the cause of the well known improvement in the lubricating ability of oils by means of admixtures of graphite, particularly in the form of colloidal graphite, according to the foregoing investigation may now be considered as having been explained."



Figs. 4 and 5. A typical electron diffraction pattern (left) is obtained when the particles making up a surface are placed at random. When the surface particles of a solid are oriented, the electron beam is not scattered but forms a series of vertical spots (right) instead of concentric rings

Conclusions

Upon correlating the findings of the various investigators mentioned herein, one obtains a rather clear picture of what takes place when colloidal-graphited lubricants are consistently employed in a mechanical device.

It is evident that the friction parts, through adsorption, take on a film of graphite, which, in addition to satisfying

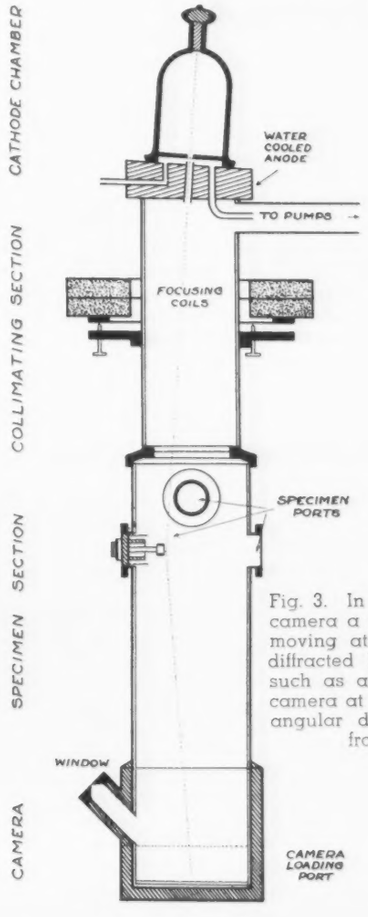


Fig. 3. In an electron diffraction camera a fine beam of electrons moving at controlled velocity is diffracted by the test specimen such as a graphoid surface. A camera at the bottom records the angular distribution of the diffracted electrons

the surface energy of a solid, exhibits marked affinity for oil. It follows that a surface which is better wetted must, of necessity, be more difficult to wipe dry. Hence, a graphoid surface carrying an oil film is a most effective reducer of the "pick-up" and wear prevalent under boundary conditions.

Where a device must operate under temperatures and pressures that are fatal to oil films, the graphoid surface is able to function as a dry lubricant for surprising periods of time—often until the oil film has been restored. It should be noted also that as a dry lubricant, graphite is well adapted for high temperature applications, since it withstands oxidation at temperatures up to 600° C. In systems where it is possible to exclude air, graphite may be successfully employed as a lubricant at temperatures far above this figure.

Other phases of the mechanics of lubrication with colloidal graphite will be discussed in a subsequent article.

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Oil Field Brine Disposal Systems Are Described

Some typical brine-conditioning and disposal systems in oil fields are described as to construction and operation, in a new 71-page Report of Investigations (R. I. 3434) by Sam S. Taylor, C. J. Wilhelm, and W. C. Holliman of the Bartlesville experiment station of the U. S. Bureau of Mines.

The data include the chemical and corrosive characteristics of brines before, during, and after conditioning in various types of systems for subsurface injection. The so-called closed, open and semi-closed types of systems that are used to condition the sour (hydrogen sulfide containing) brine are discussed, as well as the more stable brines containing iron in solution. Costs of processing brine for subsurface disposal by several experimental brine-conditioning systems were furnished by several of the operators.

Improves Oil Spread on Water

Occasional failure of mineral oil films on water to kill larvae of mosquitoes has been shown to be due to the breaking of the film into separate masses separated by areas of clear water. An additive known as "cracked spirit gum" is shown to overcome the difficulty.

The investigations are described in the 1937-38 report of the work of the London School of Hygiene and Tropical Medicine and are the work of Dr. D. R. P. Murray.

The additive is described as "certain petroleum sulfonic acids or the material known as 'cracked spirit gum' which settles out of petrols and light spirits if they have a high content of olefines, and is probably a product of simultaneous oxidation and polymerization." Cresol, vegetable oils and fatty acids were found to have a temporary effect whereas the spirit gum "greatly and permanently increased" the spreading pressure of an oil. Exposure to light also increases the spreading pressure of most mineral oils, it was discovered.

Pipe Corrosion and Coatings

The various theories of pipe corrosion and protection have been collected, co-ordinated and explained in readily understandable terms by Erick Larson in a 460-page book, "Pipe Corrosion and Coatings", just published.

The object throughout the book is to show in plain language how theory should be applied in practice and to outline specific procedure for determining the corrosiveness of soils, for making corrosion surveys of pipelines and for applying protective coatings. In other words, it is intended to be a practical book for practical men who, however, want to know the reasons for a given procedure.

The book opens with a discussion of the history of pipe protection and the development of many methods of preventing corrosion based upon experience and theories of corrosive action. Under the general head of soil surveys are chapters on the electrical characteristics of soils, testing with resistance rods, soil analysis, burial tests, and interpretation of observations in surveys.

Half of the book is devoted to the various types of coatings. Following a chapter on the necessary qualities of protective coatings are chapters dealing with pipe surface preparation, paints, petrolatum coatings, vitreous enamel and synthetic resin coatings, primers, asphaltic coatings, tar base enamel coatings, pipe coating fillers, pipe coating shields, and cement coatings. The concluding chapters cover soil test methods and cathodic protection, the latter written by George I. Rhodes, vice president of Ford, Bacon & Davis, Inc.

The book as a whole gives an excellent picture of the development of present efforts to minimize the cost of pipe corrosion, which is now estimated to be something like $35,000,000 a year, and prepares anyone for full appreciation of frequent articles on the subject in trade papers. Many diagrams, charts, and photographs are used in the presentation.

The author is a member of the firm of consulting engineers, Stevenson, Greist and Larson, and a past chairman of the American Gas Assn. Distribution committee.

Single copies at $2.50 each; two to nine copies at $2.25 each; are available from the Book Department of NATIONAL PETROLEUM NEWS.

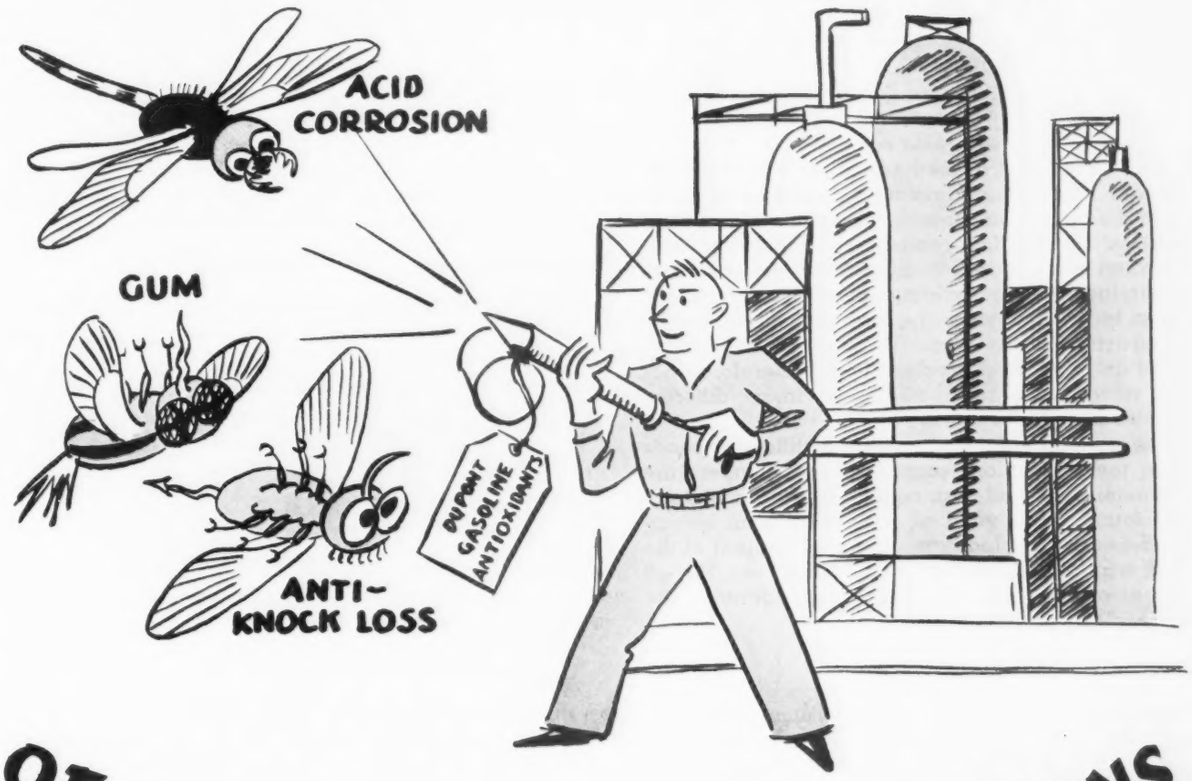
Bureau of Mines Reports On Properties of Ichthyol

"Ichthyol—Its Source and Properties" is the subject of Information Circular I. C. 7042, just published by the Bureau of Mines. The circular concerns a product obtained by sulfonating and then neutralizing with ammonia a distillate from the oil retorted from a certain high-sulfur bituminous shale found near the village of Seefeld in the Austrian Tyrol.

Due to the occurrence of fossils of fish and marine animals in the limestone associated with the shale, these deposits have long been known as the "ichthyolite schists of Seefeld". Lack of reliable information about the product, it is said, has given rise to the idea that a crude oil, tar, or shale that is peculiar in any way or contains an unusually large amount of sulfur must contain Ichthyol or similar products and therefore is very valuable; the circular is intended to correct this misconception and to provide answers for many inquiries that the Bureau of Mines receives on this subject.

From its very introduction, 600 years ago, Ichthyol has been used largely as an external application for skin diseases and inflammations, the circular states. It is a soft, semisolid, dark-brown or black material with a characteristic bituminous odor and burning taste. Its specific gravity is approximately that of water and its consistency is about that of molasses. The report includes a bibliography of 150 articles on the subject.

KEEP THE "BUGS" OUT



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GASOLINE ANTIOXIDANTS

Control of Wax Distillate Quality

Part 4. Survey of Oklahoma Wax Distillates

By J. W. Donnell*

One set of control methods is used in the treatment of many Oklahoma wax distillates to determine differences in pressing and sweating characteristics. Distillation range and quality of fractionation were found to control the factors which determine the pressability of a wax distillate. These factors are viscosity, wax content, and crystal structure of the wax. Distillation range alone is not an inherent characteristic and therefore does not necessarily rate distillates from different sources in order of merit.

The pale-oil yield from a wax distillate depends upon the distillation range, viscosity-temperature characteristics, and wax content of the distillate, it was found. The yield of scale wax from sweating depends principally upon the oil content of the slack wax, the oil content of the slack wax being dependent on the efficiency of pressing.

IT was brought out in the previous papers that fairly-close control must be maintained in the processing of wax distillates if satisfactory yields of the desired scale wax and pale oils are to be produced. Inasmuch as many different control methods have been used in Oklahoma refineries, and due to the further fact that each refinery's distillate may be different, it was decided that a survey of the pressing and sweating characteristics of such distillates under one set of control methods would prove enlightening. This survey was confined to wax distillate produced in Oklahoma, and was made possible through the cooperation of several lubricating-oil refiners who donated 10 barrels each of wax distillate.

This paper covers the data obtained from pressing this series of wax distillates in the University of Oklahoma wax press and sweating the slack wax from the pressings in a plant-calibrated air-conditioned sweater.

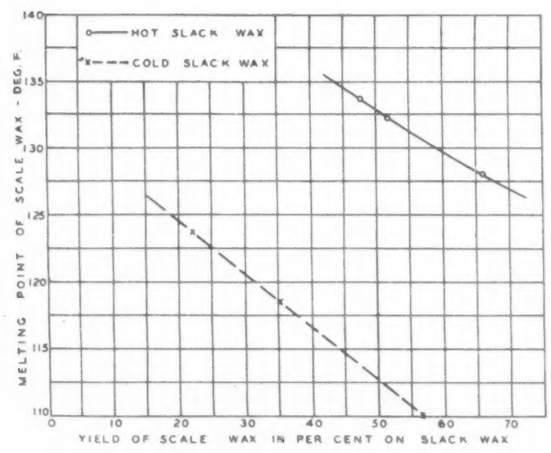

Fig. 1. The theoretical yield of scale wax varies with the melting point of the wax desired. In calculating the efficiency of sweater, the maximum yield can be determined from the curve after selecting the melting point of the wax

TABLE 1

Calibration of Experimental Sweat Pans

Kind of Slack	Sweating	Scale-Wax Yield—Oil (Per Cent)	Scale-Wax Yield—Melting Point (ASTM)	Scale-Wax Yield—Oil and Moisture (Per Cent)
Hot	Continental plant	29.8	132.6	0.64
	Continental experimental	28.9	133.3	0.40
	*OU experimental	30.3	131.5	0.70
Cold	Continental plant	16.6	124.0	0.54
	Continental experimental	19.1	120.9	0.80
	*OU experimental	20.6	121.0	0.70

*University of Oklahoma.

APPARATUS

The pressing equipment consisted of a double-pipe chiller 6 in. (inside pipe) by 32 ft. long, of the type generally known as a Carbondale chiller. Boiling anhydrous ammonia in the annular space between the 6-in. and 8-in. pipe was used as the chilling medium. An ammonia compressor was connected to the annular space. The wax distillate was charged with a 1-in. x 3-in. triplex pump. This was augmented, however, by a 6-in. x 3-in. x 3-in. reciprocating pump to take care of the initial high charging rate. The press consisted of twelve 48-in. standard wax-press blankets separated by rings ½ in. thick. The press was located in a well-insulated and refrigerated cold room 10 ft. x 10 ft. x 40 ft.

The sweater used in sweating the slack wax from the press was a duplicate of the experimental sweater built by Continental Oil Co. and described in the second paper of this series.

To be assured that the university sweater would duplicate the results obtained on the Continental experimental sweater and the Continental plant sweater, calibration runs were made. This was accomplished by charging the same slack wax to the plant sweater and both experimental sweaters. Both hot and cold slack waxes were used for these calibrations.

The experimental sweating cycle used in this calibration has been described in paper II under the caption "Standard Sweating Cycle." The results are presented in Table 1. The data show that the university sweater checked

*University of Oklahoma, Norman, Okla.

This is the fourth in a series of four articles reporting results on wax distillates, their analysis and refining, by technologists of the Continental Oil Co. and others, as presented before the meeting of the American Petroleum Institute in Chicago last November.

Part 1 was published in Refining Technology, Nov. 30, 1938, p. R-582; Part 2 Dec. 14, p. R-602; Part 3 Jan. 11, 1939, p. R-14.

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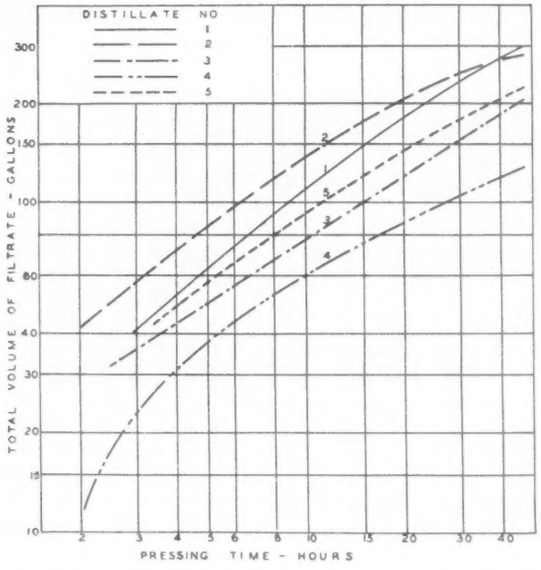


Fig. 2. Rate of flow through the wax press of the five survey wax distillates

both the Continental experimental and plant sweaters remarkably well.

The analytical method for determining the maximum theoretical scale-wax yield from slack wax described in paper I was applied to both the hot and cold slack used in the calibration run. Through the use of this theoretical scale-yield determination, it was possible to determine the efficiency of the three sweaters. Fig. 1 shows the theoretical scale-yield curve for the two slacks used.

It will be noted from the curve that the theoretical yield of scale wax varies with the melting point of the wax desired; therefore, in calculating the efficiency of the sweaters, it was necessary to select the melting point of the wax produced on each individual sweater as the basis for obtaining the maximum theoretical scale yield from Fig. 1. Table 2 shows the efficiency of the three sweaters on both hot and cold slack wax.

Calculating the efficiency data in Table 2 involves factoring the theoretical yield of wax of a certain melting point, as shown in the curve by the actual percentage yield obtained. For example, the sweating of hot slack wax on the Continental plant sweater gave a yield of 29.8 per cent wax with a melting point of 132.6; whereas the curve shows a theoretical yield of 51 per cent of wax with a melting point of 132.6. Therefore, the efficiency of the operation is:

$$\frac{29.8}{51.0} \times 100 = 59.1 \text{ per cent.}$$

TABLE 2

Relative Sweating Efficiency

Kind of Sweating	Melting Point of Scale (Same as that Actually Produced)	Per Cent Efficiency of Sweating (Based on Theoretical)
Continental plant, hot sweat	132.6	59.1
Continental experimental, hot sweat	133.3	59.8
*OU experimental, hot sweat	131.5	56.1
Continental plant, cold sweat	121.0	57.6
Continental experimental, cold sweat	120.9	65.9
*OU experimental, cold sweat	121.0	71.8

*University of Oklahoma.

These calibration runs were merely single sweatings. For a plant operating with a balanced re-cycle of intermediate waxes, the sweater efficiency is higher than that shown. The ultimate commercial plant efficiency depends upon the completeness with which intermediate waxes are re-cycled through the sweater.

CHARACTERISTICS OF WAX DISTILLATES

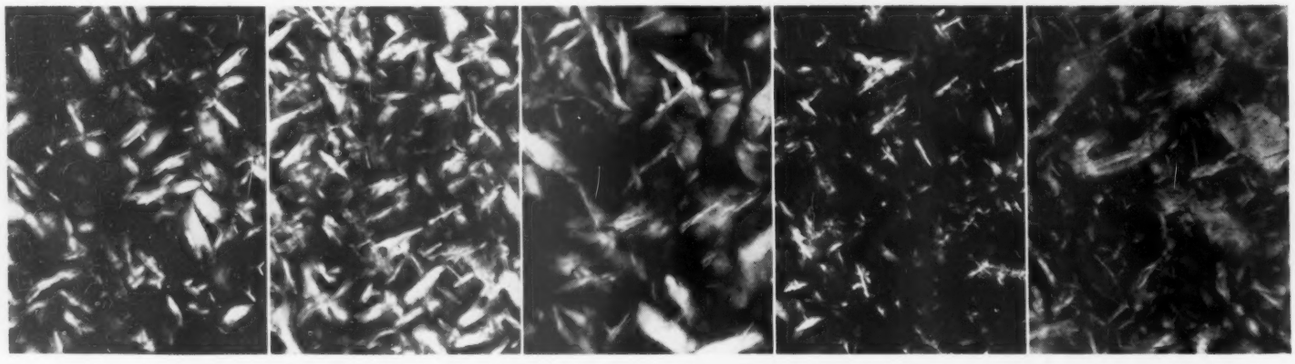
The proper control of wax-distillate processing requires extensive and regular laboratory inspection of the wax distillate. This investigation included the determination of distillation range, viscosity, saturation point, crystal structure, and wax content of each of the wax distillates studied. The results of these tests are shown in Table 3. The importance of each of these tests justifies a more detailed discussion.

Distillation

The laboratory distillation of a wax distillate under reduced pressure is generally accepted as the most accurate available measure of the quality of the distillate. It does not follow, however, that distillates from different crudes or distillates from the same crude produced from different types of distillation equipment will have equal quality for the same boiling-point range.

The five survey samples of wax distillate were distilled under 40 mm. pressure in the vacuum-distillation equipment described in paper III of this series. The distillation data are given in Table 3, as well as the viscosity of the last three 15 per cent cuts. The viscosity vs. mid-distilling-temperature characteristics are plotted in Fig. 4. This shows such a surprisingly wide range of viscosity vs. boiling-point characteristics that it is evident that an attempt to estimate the relative quality of the distillates by distillation range alone would be quite difficult.

In general, the five distillates show a very wide range in boiling-point characteristics, both as to the over-all breadth of cut and as to intermediate points; thus the 80 per cent point, which is approximately the mid-distilling temperature for the viscous pale-oil fraction, ranges from



No. 1 No. 2 No. 3 No. 4 No. 5

Fig. 3. Oklahoma wax distillates produce a wide range of crystal size and character. Distillate 1 is rated excellent, No. 2 good, No. 3 would be expected to press poorly because of large plate crystals, No. 4 is relatively bad, and No. 5, with its mixture of crystals also relatively poor, although its low viscosity would improve pressing

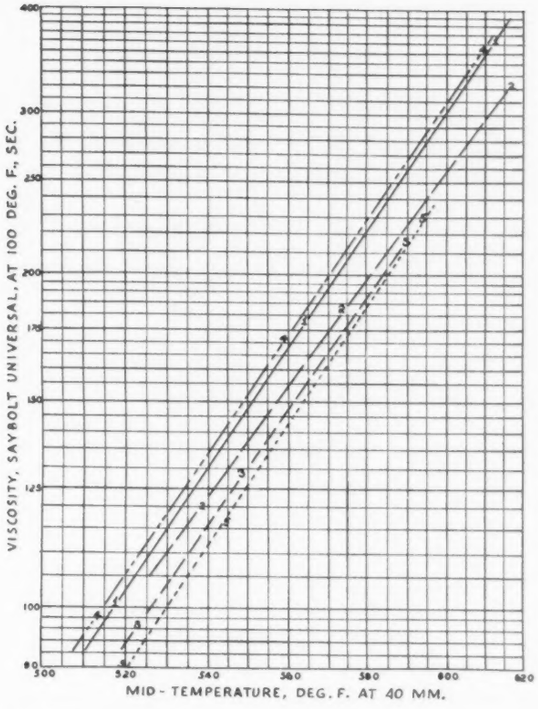


Fig. 4. Comparison of viscosity-mid-distilling-temperature relationships for wax distillate here with pressed distillates in Fig. 5 shows how the step of wax removal completely changes the relationships

552° F. in sample No. 5 to 580° F. for sample No. 2. This indicates that a great difference in pale-oil yields could be expected from the distillates. The question of pale-oil yields will be discussed in detail in connection with the characteristics of the pressed distillate.

Distillate No. 3 was not a straight cut from the crude stills, but was a blend of equal quantities of virgin wax distillate and a re-cycle stock from the sweating operation. It consisted mainly of foots oil and slack-wax intermediates. This would result in a higher ratio of low- to high-melting-point waxes, and it might be expected that the pressing quality would be poor in spite of the relatively-narrow boiling-point range of this distillate.

Viscosity

The viscosity of the wax distillates was determined by both the Saybolt Universal and the Fenske modified Ostwald viscosimeters. The results are given in Table 3 as Saybolt seconds at 100° F.

Saturation Point

The saturation point of a wax distillate is the temperature at which the first crystals of wax separate from the oil. It is determined by observing a drop of the distillate as it is slowly cooled on a microscope stage.

Crystal Structure

Photomicrographs of the distillates were made in order to determine the type of wax crystal that would be obtained on chilling each distillate. As is well known, oil containing amorphous wax or fine needle-like crystals will neither press nor sweat satisfactorily. The examination under the microscope has proved a valuable, although not an infallible, aid in determining the quality of wax distillates. It appears to be the concensus of opinion that poor-quality wax will always give a poor crystal in the photomicrograph. A fair-quality distillate, however, may at times show wax crystals that would indicate a poor pressing stock.

The procedure used in making these photomicrographs was developed by the research department of the Tide Water Oil Co., and described in detail by Davis and Campbell.* In brief, the procedure consisted of chilling the sample on a cold stage of a microscope (magnification 75 times) at a rate of 1.7° F. per min. to a temperature 10° F. below the temperature where crystals first appeared and photographing the microscopic field.

Referring to the photomicrographs in Fig. 3, it will be seen that there is a wide range in crystal size and character. Distillate **1** is an excellent example of a clean, average-size plate crystal which, upon pressing, gives a clean separation of oil and wax with a high press throughput. Distillate **2** shows good crystal form, but the higher wax content is shown by the greater crystal density. Distillate **3** shows a great preponderance of large plate crystals resulting from the blending of the foots oil and intermediate recycle stock. This distillate would be expected to press poorly. Distillate **4** shows a relatively bad crystal structure—the small, poorly-formed crystals indicating a high ratio of amorphous or ceresin type of wax. Poor pressing and sweating would be expected. Distillate **5** shows a mixture of large plates, many malformed, and small needle-like crystals. Relatively-poor pressing would be expected—although, in view of the low viscosity of this distillate, it should press better than would be expected from the crystal structure alone.

Wax Content

In order to make a comparison of the pressing characteristics of the wax distillates, it was necessary to analyze the stock for its wax content, as well as to determine the "dryness" or oil content of the slack wax in the press. The analytical method used was the one described in paper I of this series.

From Table 3 it can be seen that, with the exception of distillate **4**, the wax content varied but little. It might be expected that distillate **3** would contain the largest quantity of wax, because that distillate contained 50 per cent of recycle stock. It would be difficult to justify the recovery of wax from a distillate such as distillate **4**, in view of its low wax content and poor crystal structure.

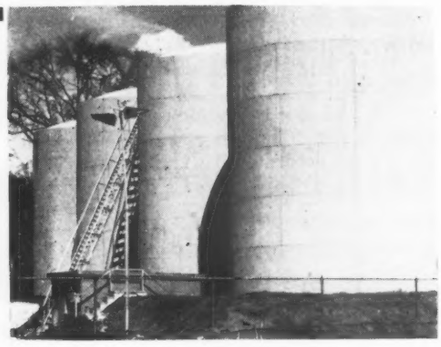
Experimental Pressing of Survey Distillates

It was originally planned to carry out the experimental pressing of the survey samples under the usual double-pressing cycle used commercially to produce pale oils of low

TABLE 3
Wax-Distillate Characteristics

Wax Distillate No.:	1	2	3	4	5
Viscosity (Saybolt Universal) at 100 deg. F., sec.	69.8	76.4	73.0	70.0	58.0
Saturation point, deg. F.	70	68	68	67	69
Wax content, per cent	9.1	11.3	12.8	6.1	9.5
Wax melting point, deg. F.	116	121	116	117	116
Distillation, in Deg. F., at 40 MM.:					
Initial boiling point	295	200	202	294	216
10-per-cent point	386	395	428	391	366
20-per-cent point	406	433	460	408	400
30-per-cent point	426	457	476	423	424
40-per-cent point	451	483	492	448	451
50-per-cent point	478	505	506	476	473
60-per-cent point	510	532	520	508	495
70-per-cent point	539	555	534	536	523
80-per-cent point	571	580	554	568	552
85-per-cent point	585	592	564	581	565
90-per-cent point	602	608	579	600	582
End point	640	648	620	637	623
Cut: 55 to 70 per cent:					
Viscosity (Saybolt Universal) at 100 deg. F., sec.	101	120	96	98	77
Mid-temperature, deg. F.	517	538	523	514	502
Cut: 70 to 85 per cent:					
Viscosity (Saybolt Universal) at 100 deg. F., sec	178	181	129	172	117
Mid-temperature, deg. F.	564	574	549	559	545
Cut: 85 to 100 per cent:					
Viscosity (Saybolt Universal) at 100 deg. F., sec.	365	323	215	354	222
Mid-temperature, deg. F.	612	617	590	610	594
Estimated 160-viscosity content:					
Mid-temperature for 160-viscosity, deg. F.	563	570	584	554	585
Mid-per cent for 160-viscosity	77.5	75.6	91.0	75.5	90.5
Estimated content of 160-viscosity waxy oil, per cent	45.0	48.8	18	49.0	19

*L. L. Davis and D. S. Campbell, *Proc. API* **14M [III]** 32-9 (1933).



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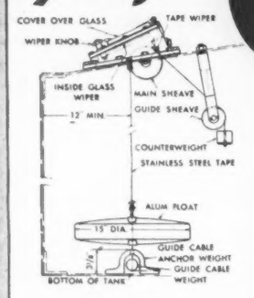

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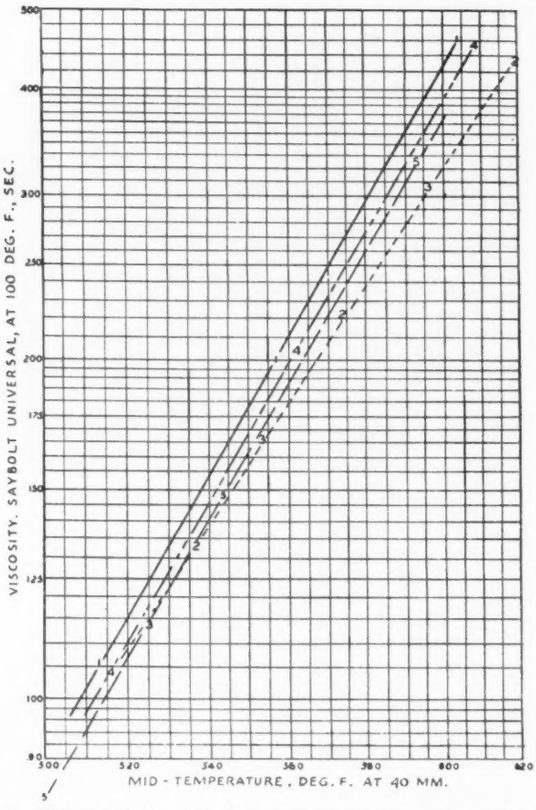

Fig. 5. The yield of pale oil of any viscosity may be estimated from these relationships for pressed distillates

cold test. The preliminary work showed this to be impractical because of the time required and the need of excessive quantities of distillate to produce sufficient wax to fill the press twice. It was, therefore, decided to make a single pressing at from 0 to 5° F. It is believed that the single pressing gives a true measure of the relative pressability of the distillates under study.

The pressing cycle was a straight 48-hour pressing with a charging pressure of 250 lb. per sq. in. The oil temperature was maintained by controlling the back pressure on the ammonia in the Carbondale chillers. The press-room temperatures were held as close as possible to the pressing temperature by expanding ammonia in cooling coils located near the ceiling. When filling the press, the standby steam pump was used. The chiller had ample capacity for the high filling rate, so that the first charge entered the press at the desired pressing temperature. About three hours were required to bring the press up to the running pressure of 250 lb., which was then maintained by the regular triplex charging pump.

A summary of the pressing conditions and throughputs is given in Table 4. The average temperatures for all runs were reasonably close, except that in the case of distillate 2 the temperature averaged about three degrees higher.

The pressing quality of the wax distillates based on the total throughput for the 48-hour period shows distillate 1 to be the best, with 300.3 gallons charged. The rating of the other distillates in order of merit based on total through-

TABLE 4

Pressing Conditions and Throughput

Wax Distillate No.:	1	2	3	4	5
Total time on pressure, hours	48	48	48	48	48
Charging pressure, lb.	250	250	250	250	250
Average temperatures, deg. F.:					
Oil inlet	+1.7	+5.9	+2.9	+1.1	+2.9
Cold room	+3.5	+3.1	+0.5	−1.8	+0.5
Total throughput, gal.	300.3	282.9	184.3	133.2	223.1

put is: distillate **2, 5, 3,** and **4.** A better picture of the relative pressing rates is given in Fig. 2, in which the accumulated throughput in gallons is plotted against elapsed time. A study of this curve shows that for the first 40 hours distillate **2** gave a greater throughput than distillate **1,** in spite of its relatively high viscosity. The high wax content of distillate **2** probably accounts for the decrease in rate towards the end of the press run due to the more rapid filling of the press.

Fig. 2 shows that the other three distillates line up throughout the cycle in the same order as given for the total throughput. Distillate **4** was an extremely-poor pressing stock; and, in spite of the low wax content, showed a very low throughput throughout the entire cycle. The wax was soft and gummy, and tended to plug the blankets. It is, therefore, evident that the poor pressing quality of this distillate is due to wax-crystal characteristics.

Unfortunately, the pressing of distillate **5** followed immediately after distillate **4** without cleaning the blankets. The relatively-poor showing of distillate **5**—when considering its physical characteristics of low viscosity, narrow boiling range, and relatively-good wax structure—must certainly be due to the dirty condition of the blankets. An earlier pressing of distillate **5,** under different conditions and with clean blankets, gave higher throughputs than distillate **1** and a clean low-oil-content cake.

SLACK-WAX SWEATING OPERATION

The slack wax obtained from the wax-pressing operation was sweated in the experimental sweat pans which were described in the first part of the paper. Inasmuch as the slack wax was produced at a single pressing at 0 to 5° F., it represented the total wax content of the wax distillate. It was, therefore, necessary to modify the standard sweating cycle for hot- and cold-pressed slack waxes. The modified sweating cycle was:

Sweating Cycle

Coil-water temperature during chilling period, deg. F. 75

Air temperature during chilling period, deg. F..... 85

Length of chilling period, hours 12

At the end of the chilling period, both air and water temperatures were held at 85° F. for 5 hours.

Coil-water temperature during sweating cycle was increased 3 deg. per hour, until a temperature of 115° F. was reached—at which temperature the water was held until the completion of the sweat.

Air temperature during sweating period was the same as the coil-water temperature.

The chilling air temperature of 85° F. was arbitrarily selected. As was discussed in paper II of this series, the air temperature during the chilling period of a sweating cycle has an appreciable effect on the scale-wax recovery or efficiency of sweating. Work in this laboratory has checked the results obtained on the relationship between air temperature and scale-wax yield as given in Fig. 3 of paper II. It is, therefore, permissible to estimate scale-wax yields at air temperatures other than 85° F. by the use of this relationship.

As time was not available to carry out a series of sweatings in which the intermediate waxes were returned for resweating to obtain an ultimate yield, a single sweating of the slack wax was made. Each sweating was carried out to produce a scale wax having an oil and moisture content by ASTM D 308-29T Method of one per cent, which is the usual commercial specification for crude scale wax. In order to obtain scale waxes of 1 per cent oil content, the sweating was carried well past the probable finished scale-wax point.

The run-off from the pans was collected hourly, and held separate. After melting down the scale, the run-off samples were blended one by one (using the last first) with the scale wax until the resultant blend showed a 1 per cent oil content. This blend was taken as the scale-wax yield. Table 5 shows the oil content of the slack waxes and the sweater yields of scale wax.

The results of the experimental sweatings show that the scale-wax yield was a function of the oil content of the slack wax from the presses. This was discussed in paper II of this series. The relationship between oil content of slack wax and the yield of scale wax from the sweat pans, as determined from the Continental commercial sweat pans and experimental sweater operation, is given in Fig. 2 of paper II. This laboratory has further substantiated this relationship. It is, therefore, evident that the sweater yields for the survey samples were dependent entirely upon the oil content of the slack waxes from the pressing operation.

It appears from these data that the given relationship between oil content and sweater yields is characteristic of Oklahoma wax distillates; therefore, the wax yield from a given distillate depends upon the press operation and the degree of separation of wax and oil in the presses. The experimental sweating gives no further information regarding the relative quality of the wax distillates.

It should be remembered that the results reported are for the one set of wax-pressing conditions used. Distillates **2** and **3** were at a distinct disadvantage when pressed at 0° F. because of the relatively high viscosities and wax contents of these distillates. In view of the excellent crystal structure, particularly in distillate **2,** it is probable that these distillates would press excellently at a higher temperature, and would give slack waxes of low oil content. The poor

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(See also page 44)

TABLE 5

Experimental Sweater Yields of Scale Wax

Stock No.:	1	2	3	4	5
Per cent wax in distillate (distillate = 100 per cent)	9.1	11.3	12.8	6.1	9.5
Melting point of wax, deg. F.	116	121	116	117	116
Per cent oil in slack (slack = 100 per cent)	34.2	42.0	49.0	70.8	53.2
Yield of scale (slack=100 per cent)	36.1	19.5	9.5	2.0	7.0

pressing with distillate 5 was probably due, as noted above, to the dirty blankets.

PALE-OIL CONTENT OF THE PRESSED DISTILLATES

Inasmuch as the commercial purpose of wax-distillate pressing is the production of dewaxed "pale" lubricating oils, the available pale-oil content of the distillate is of primary importance. The relationship between distillation and pale-oil yield was discussed in paper III of this series, and the methods given therein have been used to study the pressed distillates of the survey samples.

Table 6 gives the distillation and viscosity characteristics of the five pressed distillates. The viscosity-mid-distilling-temperature relationships for the pressed distillates are plotted in Fig. 5. It is particularly interesting to compare this figure with Fig. 4, which gives similar data for the wax distillates. It will be seen that the step of wax removal completely changes the viscosity-temperature relationships, and also materially changes the relations between the distillates.

By using the curves in Fig. 5, the yield of pale oil of any viscosity may be estimated. The estimation of the yield of raw pale oil of 200 viscosity at 100° F. is given at the bottom of Table 6. The first step is to determine the mid-distilling temperature equivalent to a viscosity of 200 sec. from Fig. 5. Using this mid-temperature, the corresponding mid-per-cent point is obtained from the distillation data by extrapolating on a smooth curve. The estimated yield of pale oil is then obtained by the formula:

$$\text{Yield} = 2\ (100 - \text{mid-per-cent})$$

The results show a wide difference in pale-oil yield from the five distillates, i. e., from 32 per cent from distillate 5 to 50.6 per cent from distillate 2. Assuming these figures to be the correct measure of the relative quality of the five distillates from the viewpoint of pale-oil yields, it is interesting to see whether it is possible to forecast the relative value of the distillates from the physical characteristics of the wax distillates.

Referring to Table 3, it will be seen, as would be expected, that the viscosity of the wax distillate does not determine pale-oil yields. It is true that distillate 2 has the highest viscosity and shows the greatest pale-oil yield, and that distillate 5 shows the lowest in both respects; however, distillate 3 has a high viscosity and a very low pale-oil yield. A study of the distillation range of this distillate explains the apparent anomaly. The high viscosity of distillate 3 is due to its relatively-narrow over-all boiling-point range, rather than the inclusion of large quantities of high-boiling viscous components; thus the over-all distillation range between the 10- and 90-per-cent points is only 151° F., as compared with 213° F. for distillate 2.

A similar study of the distillation curves for the wax distillates does not disclose any simple relationship between boiling-point characteristics and pale-oil yields. Using the viscosity-mid-temperature data from Fig. 4, the yield of waxy viscous oil of any desired viscosity may be estimated. The lower portion of Table 3 gives this calculation for the yield of waxy oil having a Saybolt Universal viscosity of 160 sec. at 100° F. It will be seen that the yield of waxy viscous oil does not give the correct ratio of pale-oil yields for the five distillates. Distillates 1, 2, and 4 are of the correct order of magnitude; but distillates 3 and 5 show proportionately very much too low.

It is, therefore, evident that no simple physical characteristics of a wax distillate can be used to estimate the relative pale-oil yields. A true estimate of such yields can be made only from the distillation range and viscosity-temperature characteristics of the dewaxed or pressed distillate.

CONCLUSIONS

1. Although the distillation range of a wax distillate is a valuable measure of the quality and uniformity of a wax distillate from a given source, it is not an inherent characteristic; and, therefore, does not necessarily rate distillates from different sources in order of merit.

2. The pale-oil yield from a wax distillate depends upon the distillation range, viscosity-temperature characteristics, and wax content of the distillate.

3. The pressability of a wax distillate is determined by its viscosity, wax content, and the crystal structure or character of the wax. For oil from any given source, these factors are controlled by the distillation range and quality of fractionation.

4. The physical condition of the press, such as cleanness of blankets, materially affects pressing efficiency.

5. The yield of scale wax from sweating depends principally upon the oil content of the slack wax, the oil content of the slack wax being dependent on the efficiency of pressing.

6. Other factors affecting sweat-plant operation are chilling temperatures, amount of re-cycle, melting point, and oil content of finished scale wax, and the actual quality of the wax crystals.

New Polysection Heat Exchanger

A new heat transfer unit, the G-Fin Polysection has been developed by Griscom-Russell Co., with seven U-bend elements, built especially for handling liquids in greater capacities than are practicable with the Twin G-Fin Section, from which the new unit was developed.

R. P. Anderson Elected

R. P. Anderson, secretary, Division of Refining, American Petroleum Institute, was re-elected vice-chairman of the Standards Council of the American Standards Association at its recent annual meeting.

Edmund A. Prentis, secretary and chief engineer of Spencer, White & Prentis, engineers and contractors, succeeds Dana D. Barnum, as president. R. E. Zimmerman, vice president of U. S. Steel Corp., was elected new vice president of the association.

TABLE 6

Pressed-Distillate Characteristics

Distillate No.:	1	2	3	4	5
Distillation, in Deg. F., at 40 MM.:					
Initial boiling point	298	196	204	300	225
10-per-cent point	388	395	410	392	366
20-per-cent point	408	432	446	410	394
30-per-cent point	426	461	470	428	420
40-per-cent point	447	486	488	454	442
50-per-cent point	475	409	505	480	467
60-per-cent point	506	531	520	510	493
70-per-cent point	536	553	538	539	521
80-per-cent point	566	580	559	568	550
85-per-cent point	581	594	576	584	567
90-per-cent point	596	610	586	600	583
End point	639	649	628	636	624
Cut: 55 to 70 per cent:					
Viscosity (Saybolt Universal) at 100 deg. F., sec.	106	133	114	104	83
Mid-temperature, deg. F.	513	536	525	517	500
Cut: 70 to 85 per cent:					
Viscosity (Saybolt Universal) at 100 deg. F., sec.	200	222	167	206	149
Mid-temperature, deg. F.	558	574	553	561	543
Cut: 85 to 100 per cent:					
Viscosity (Saybolt Universal) at 100 deg. F., sec.	461	439	308	457	328
Mid-temperature, deg. F.	604	620	597	609	593
Estimated yield of 200-viscosity pale oil:					
Mid-temperature, deg. F.	556	567	567	560	564
Mid-per cent	76.5	74.7	82.2	76.0	84.0
Estimated yield, per cent	47.0	50.6	35.6	48.0	32.0

"Varnish" Deposition

A Problem in Today's Engines

One of the problems in the efficient operation of the modern automotive engines which is being discussed today by the oil company chemists and the automotive engineers has to do with the tendency for the so-called "varnish" to form on valves and piston rings, under certain conditions which are not as yet thoroughly understood.

This subject was formally discussed at the recent meeting of the Society of Automotive Engineers in Detroit and in the future it seems destined to meet with wider discussion, both in general within the two industries, as well as among their technical men. It is important that the oil marketing company and also the operators at its stations know what this problem is, even though it is not as yet thoroughly understood and is controversial in nature as to the causes for the deposits.

Hence NATIONAL PETROLEUM NEWS is publishing here, rather than in its columns devoted to more technical subjects, the report prepared by its staff writers on the SAE meeting at Detroit. This meeting presents the opportunity for technicians within the oil and automotive industries to meet together on a common ground and discuss problems vital to their mutual interests.

As has been pointed out by NPN before, the fear in the minds of any new car owner that this "varnish" condition may be encountered in the operation of his car, can be turned into a sound sales argument for a more frequent change of his crankcase oil as a protective measure and this can be done without inferring any criticism of the oil he may be using, since this condition has been found with many types of oil.

The reader will also find in following articles other subjects discussed at the SAE meeting of interest to the oil man. Among them are certain contributions by two oil company engineers to the knowledge of detonation in an automotive engine.

ONE of the problems being encountered today in the maintenance of the latest model motor cars is the accumulation of "varnish" in engines, which may cause partial or intermittent sticking of valves and piston rings. Often where only valves are affected, the engine surges when operating with constant throttle at road loads and this action is frequently erroneously diagnosed as lean mixtures or vapor locking.

The problem is one which is sometimes attributed to the motor fuel and lubricating oil and it may be expected that oil companies and service station operators will hear more of the problem if it has not already come to their attention.

The subject was given considerable attention, with opinions expressed and published, at the annual meeting of the Society of Automotive Engineers in Detroit Jan. 9-13. While no agreement was reached as to the cause or cure of this difficulty, some of the controversial views on the subject were presented and should be studied by the oil company, even though it is a technologist's problem to solve.

It should be understood that there has always been a so-called "varnish" problem but that it did not reach its present proportions until cars were built with their present close clearances, higher pressures, high speeds, and quite possibly, higher local temperatures. "Varnish" was carefully defined by F. F. Kishline of Willys-Overland Motors, Inc., who summarized for the S.A.E. the opinions of a number of contributors to a symposium on "varnish." It is a "synthetic resinous compound" produced by little known chemical reactions, oxidation, exposure of oil to relatively high temperatures and presence of dirt and moisture, he said. It adheres tightly to smooth metal surfaces and its color ranges from light amber down to brownish black. It has also been commonly termed "burnt oil."

In the early stages of formation, it was said to cause the partial or intermittent sticking of valves and piston rings, already mentioned, but "in chronic form, it causes sticking of valves, rings, and sometimes tappets at intervals, and requires more or less regular removal until, or unless, considerable increase in clearance of these parts has occurred from normal wear. In this state, the cause is not often identified as varnish, particularly on valve stems and rings, since it evidently assimilates and acts as a binder for black carbon and has been termed 'sticky carbon', " said this automotive engineer.

"Incidentally, the latter type formation has been observed on the manifold side of intake valve heads one-eighth inch or more thick, and on the stems sufficiently thick to prevent proper seating, and causing rough idling and apparently defective carburetion."

"In acute form, varnish has been known to stick engines so they could not be turned over with the starter or by towing the car. Usually after being allowed to stand for awhile, engines so affected may be started again . . . . this latter type of sticking-up is described as occurring when the engine is permitted to idle after normal driving, and usually happens in relatively new engines. In extreme cases, the pistons and tappets have become permanently stuck so they could not be removed without damage. It should be noted here that in at least some cases of this complete sticking-up, the engines were not run hot, nor on lean mixtures, nor were they operated under any abnormal conditions. In other cases, of course, the exact history of engines is not available."

AMONG the "facts and conditions" as given by contributors to the symposium, largely representatives of the automotive industry, and as presented at the SAE meeting, one stated:

"We have eliminated as major factors in the formation of this varnish, fuel used, the oil filter and crankcase ventilation." Another stated; "Tests show that there is considerable difference in different kinds of popular brands of lubricating oils as regards formation of varnish and other deposits." A third found "indications of the lacquer improving bearing condition in the connecting rods." Following are quotations of several other observers.

"Experienced several cases of seized engines. In some cases, several different oils were tried with indifferent results. Trouble appeared only with engines which were fairly new—no record of seizure after more than 15,000

miles—have had no trouble recently—actual percentage was small."

"While driving test cars at high speed, a surging or loss of speed was repeatedly encountered, and the opinion of all witnessing the test was that 'running fuel vapor lock' was the trouble. However, after investigation and repeated duplication of the results, it was proven that the fading of power and speed was because the crankcase oil had varnished the pistons and piston rings."

"In laboratory tests, it was found that by an oil sump temperature of 280-290° F., and running at 3500 r.p.m. road load, enough varnish would be formed, with some oils, to materially increase the starting friction of the engine, and in some cases, the engine seized in approximately 2200 miles."

"Various mechanical changes were made in engines in an effort to reduce varnish formation when certain oils were used; namely, oil consumption intentionally increased; pistons and rings of a former model installed; complete former model engines tested under same conditions; piston clearances increased. None of the above changes resulted in a reduction of varnish formation when using these oils."

"Varnish can be deposited in an engine being operated with outside power if an oil temperature of approximately 280° is maintained. We used to find exhaust valves stuck at the top end with black carbon—today, we find them stuck at the bottem end due to varnish."

IN addition to these observations of "facts and conditions" the following opinions were expressed, by the contributors to the symposium on the subject of varnish, as presented at the Detroit SAE meeting:

"Believe we can deposit varnish with some present-day oils in any automobile engine, regardless of vintage, if oil temperature of approximately 280° is maintained. An engine we built in 1929 operated at 300° oil temperature, and we never saw any varnish in it.

"Some oils that are good, as regards varnish formations, have developed considerable corrosion of lead bronze parts in the engine, and, therefore, those oils still need further development to reduce the acid formation qualities which result in corrosion.

"We have made no material changes in engine clearances or fits during the past three years, and oil sump temperatures have dropped 25 degrees due to lengthening water jackets. We are convinced that the varnish problem is mainly an oil problem, since there are good and bad oils in this respect.

"Varnish has been forming in engines ever since the first internal combustion engine ran under its own power, even with the very best of conventional motor oils. The quantity of this petroleum varnish depends largely upon the temperature of the engine parts and the length of time the oil film actually cooks while held in contact with these heated surfaces. However, because of close manufacturing limits, varnish today is a very serious problem to engine builders if further engineering advancement is to be made.

C. B. Veal, as research director of the Society of Automotive Engineers, has had a prominent part in the work of the Co-operative Fuel Research Committee, a joint activity of the automotive and petroleum industries. Veal is secretary of the CFR

"We have found that a small amount of lacquer formation is rather effective in preventing corrosion, particularly as regards valve springs, and, if the oil companies go wild in an effort to combat lacquer formation, the cure may be worse than the disease.

"My opinion is that varnish, or sludge, is introduced by local hot areas and hasn't much relation to sump temperature. A few years back, our sump temperatures were considerably higher than today, but we never heard of varnish or lacquer.

"If varnish is caused by excessive temperatures, why did we not experience this in our previous engines which we know ran considerably hotter, both average and local, than our recent designs?

"We feel that the development of an oil that will keep clean, prevent ring plugging, and which would be more stable at high operating temperatures, would be very desirable, but we want to be sure, before making any drastic changes, that we do not cure one evil and raise another and worse one. This has happened, as you may remember, in the not distant past. It is possible that some type of alloy bearing will be a necessity in the near future. For this reason, we feel that oils should be developed which would prevent corrosion and give the automobile engineer every opportunity to take advantage of new developments as soon as possible.

"Much can be accomplished by careful design to minimize troublesome formations, but complete freedom from all trouble from this source, in the hands of all owners with the many conditions of operation, can only be obtained by further development and coordination of the lubricants themselves.

"We believe that this varnish problem has come from a change in the character of oils due to changes in methods of production, and that its cure will come from, or be effected by, oil refiners."

THE question "What To Do About It," with regard to the so-called varnish problem, Kishline looked upon largely from the point of view of the automotive engineer in his paper presented to the SAE. He did give a word of caution, which he said had been sounded by two contributors to his symposium, against "ill-considered changes in lubricating oils." He questioned whether the lower oil consumption generally prevailing in motor car operation today is a factor in the problem.

"Very evidently, varnish is not partial to, nor a respector of, any particular engine design nor any of the various combinations of design features that might seem to have, logically, some influence on the condition," Kishline stated.

"Carefully audited, it would appear that time and temperature are principal items in an engine which govern the condition, and the temperature may or may not be the sump temperature. Whether these temperatures have changed greatly or not in recent designs should be left to the reader. According to a recent technical survey, the average passenger car engines of 1939 develop 78% more power per cubic inch of displacement than did those of 1925. The increase has been gradual, but consistent, each year and will undoubtedly continue. Possibly there is a critical temperature above or below which the formation is slight, although one of the experiments above mentioned indicated formation at temperatures up to 400°.

"Possibly the rate of oil circulation, particularly over hot surfaces, is a factor. Possibly the reduction of initial wear in engines by better finishes, plated pistons and treated rings, contributes adversely through maintaining original clearances and reducing metal particles in the oil. Whether lower oil consumption generally prevailing now is a factor is certainly questionable."

It pays to name it

"OUR DUBBSCRACKED GASOLINE
IS DOING ITS OWN ADVERTISING"

A refiner wrote that He is running his cracking unit for all it's worth and can't make enough Dubbscracked gasoline

Dubbscracked gasoline advertises its goodness to every motorist that tries it —and proves it in his engine

Dubbs refiners cash in on that goodness

Cash in on the name as well as the quality—

Tell the motorist it's Dubbscracked gasoline

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Higher Compression, Retarded Spark, Boost Engine Power

Proof of the power loss involved in operating engines under conditions which produce no knock whatever was presented at the Detroit SAE meeting by Neil MacCoull of The Texas Co. After an exhaustive study of the relationship between compression ratio, spark advance, and maximum power developed in the gasoline engine, MacCoull stated that his results "make one pause and wonder if it is economically necessary for a car to be completely free from knock at all times." He showed that, by taking a two per cent power loss, the average octane number of the fuel required may be reduced 15 numbers, the value for the reduction with different engines and fuels ranging from 14 to 22 octane units.

Similarly, he showed that it is desirable to operate the engine with the spark somewhat retarded, from the point of maximum power; retarding the spark from 20° before top dead center, the setting for maximum power, to 10° lowered the octane requirement eight units, with a power loss of 2%. As a general fact, MacCoull found that a compression ratio about one unit higher than the "critical ratio," that is, the ratio at which knock is just discernible, with the spark somewhat retarded from the maximum power setting, gives a power peak; beyond this compression the power curve starts downward again.

Significant indeed to the car operator is MacCoull's statement that "car manufacturers make use of this combination of high compression and spark retarded from critical, on their cars, not only because of the gain in power and efficiency at full throttle, but because this gain in efficiency is reflected particularly at part throttle." In other words, operating efficiency and power are promoted by using an engine of high compression ratio, and then retarding the spark advance until a power peak is obtained with mild knocking.

To illustrate this case, MacCoull assumes a hypothetical case of an engine operating at 4.5:1 compression ratio; if the engine is changed to 5.5:1 ratio and the spark retarded from 21° as the "ideal setting" to, say, 7° advance, the power gain is nearly 9%; or, using a higher octane number fuel to permit the ideal setting to be used increases the power by 14%. A 6.5:1 ratio, with the spark well retarded to avoid serious knock, would show no power advantage over a 4.5:1 ratio on the same fuel. However, using a premium fuel and the best spark advance would show 21% gain over the 4.5:1 ratio operation.

As a result of this study, MacCoull decides that it is desirable to use a compression ratio about one unit above the critical, retarding the spark until serious knock is eliminated.

Neil MacCoull, of New York, The Texas Co., whose report on "Power Loss Accompanying Detonation" at the Detroit SAE meeting revealed startling facts regarding the shortcomings of automotive engines as to uniformity of anti-knock characteristics

★ ★ ★

Varying Knock Tendencies Found In Engines of the Same Model

Individual variations in the adjustment, condition and manufacturing standards of automotive engines, all of the same make, often make as wide a difference in the detonation characteristics of engines as do wide differences in compression ratios or design principles employed. Automotive engineers are coming to understand this condition, and some of the facts discovered in knock testing research does and will have great effect on design of gasoline engines.

"It is not unusual," said A. J. Blackwood, C. B. Bass and O. G. Lewis, of Standard Oil Development Co., before the Detroit SAE meeting, "to find ten cars of a given make and model differing from one another by ten or even 15 octane numbers" in the fuel required to operate without detonation. Thus no individual car of any make can be said to have a definite octane number requirement.

For example, with a variation of ten octane numbers on the requirements for two individual cars of one make, this means, they said, that one might operate satisfactorily on 60 octane number fuel, while another, in the same state of wear, cleanliness, adjusted to the manufacturer's standard, would need 70 octane number to operate satisfactorily.

With such a wide variation, there seems to be little that the refiner can do in furnishing fuels to the consumer, except possibly to supply a fuel so high in octane number that no car engine will knock when operating on it. The additional cost to the refiner of raising his fuel ten octane numbers may vary from .025 cent to more than one cent per gallon, an extra cost to the refining industry of millions of dollars per year.

Because of faulty air-fuel mixture distribution to the several cylinders, the cylinders of a single engine may vary by as much as seven points in the ratio supplied to each. Further, because of variation in individual cylinder spark advance, different cylinders may show octane-number requirements varying by as much as nine octane numbers, due to spark advance difference alone, these investigators found. And, because of these variables, and others too numerous to mention, a survey of the four lower priced cars showed a maximum variation of 23 octane numbers in one make, and 17, 10 and four octane numbers in the other three, respectively.

These authors found also that the actual spark advance to produce equal knock intensity in different cylinders of the same engine—an eight-in-line engine in this case—varied by as much as 15 degrees. When all these cylinders are synchronized at the same actual spark advance of 16 degrees, the octane number requirements of different cylinders still varied by as much as 16 numbers. Even greater variation was found when working with very lean over-all mixtures.

The differences in spark advance found in individual engines is due to inexactness of the setting of the cams, and much of the variation due to this could be eliminated in the assembling of the engine in the factory, these authors stated. By selecting the best position for the distributor cams on each cylinder, the octane requirement of a given engine may be reduced by five to six numbers, they found, an important reduction which might be taken advantage of by either supplying a less expensive fuel or by improving the efficiency of the engine to utilize properly the higher value fuel.

Studying the effect of fuels of differ-

ing volatility on manifold distribution, these researchers found that the air-fuel ratio in different cylinders of the same engine varied by as much as 7.1. Better manifolding is imperative if this variant is to be eliminated or reduced to negligible values, they said. When testing fuels with volatility ranging from regular grade gasoline to pure butane, better manifolding showed a reduction in mixture ratio variation from 7.1 to 4.7, an improvement of about 33%.

It was found necessary to use a volatility equal to aviation fuel before any appreciable improvement was obtained. However, using a special manifold and two carburetors, instead of the regular manifold and a dual carburetor, improved the mixture distribution by reducing ratio difference from 7.1 to 3.1, an improvement of 56% in distribution on fuels of the same volatility. Here it was found that the 90% point in the ASTM distillation curve is a fairly reliable index of distribution efficiency.

As a result of these investigations, the authors decide that present-day cars are not capitalizing on the continued efforts of the petroleum industry to provide fuels of better volatility and higher octane number. Readjustment of distribution efficiency, and of the actual spark adjustments is necessary if the quality of our present fuels is to be utilized properly. Spark advance can be adjusted to a great extent at the factory by determining that each cylinder has the best spark setting for the fuel it receives and by designing better manifold-carburetor assemblies, they believe.

A. J. Blackwood, of Elizabeth, N. J., of Standard Oil Development Co., who with his colleagues C. B. Kass and O. G. Lewis, at the Detroit SAE meeting showed how faulty mixture distribution and variations in individual cylinder spark advance make as much as 23 octane numbers difference in the anti-knock ratings of different cylinders in the same make and model of automotive engine

Question 'Road Octane Number' As Index to Performance

Knocking tendency, one of the most publicized properties of motor fuel through its rough relationship to octane number, is still being given intense study in attempts to find a more definite relationship. One of the chief difficulties is that, while a motor fuel may have a definite octane number as measured in the laboratory, its "road octane number" may differ by several numbers. In fact "road octane numbers" disagree even in the same car depending upon the conditions of engine adjustment, particularly spark advance, and operation.

With this recognized, L. E. Hebl and T. B. Rendel, of Shell Petroleum Corp., at the Detroit SAE meeting discussed dropping road ratings as reliable indications of the performance of motor fuels in service, although they may be indications of motor car performance and as such provide a valuable tool for the study of the appreciating tendency of an engine.

Use of the variable "road octane numbers" as found during five co-operative surveys in road performance tests between 1931 and 1937 is now felt to be undesirable, these authors stated because the findings have tended to confuse the issue concerning logical development of the science of detonation (knocking). The authors backed up their views with the evidence that recent studies in several laboratories have produced encouraging results and are expected to produce more in future work, so that octane number may come to have a more definite meaning in relation to knocking tendency.

By careful study of adjustments of spark timing, the authors showed that the loss of power obtained by adjusting the spark timing to suit a wide range of octane numbers is comparatively small. Data on the effect of compression ratio showed cracked fuels may be "sensitive to pressure and that anti-knock values of these fuels may decrease with increasing pressure more rapidly than do those of straight-run fuels. From a practical standpoint the data mean that the advantage now enjoyed by cracked fuels over straight-run fuels may diminish rapidly if compression ratios of engines are increased materially."

* * *

Limitations of Oil Filters Discussed by Auto Engineer

Filtering Fallacies, discussed at length by Austin M. Wolf, New York automotive consultant, at the Detroit SAE meeting, included warnings to the automotive industry that, while the oil filter has its proper niche in the automotive scheme of things, like other good developments, the benefits which have been actually realized have caused some to consider this equipment as a cure-all for motor ills.

Filter manufacturers have disseminated dangerous information, such as the claim that oil changes are not necessary if their filter devices are used, he said. On the other side of the fence, oil companies have stressed a need for too frequent oil changes, Wolf said, in view of the good condition of the oil, shown by inspection, at the time of recommended change. Oil is cheaper than parts, he pointed out significantly, and at least no harm can be done to the engine by frequent changes.

One large oil consuming company has decided that filters are most efficient for about 1000 miles before changing the filter element, and their top efficiency is relatively short-lived. Summarizing a great mass of data obtained from a large number of oil and automotive operating companies, in cluding many truck, bus and such organizations, Wolf found that another company considers that great strides must be made in the design of filters if they are to be truly effective. Another finds that the cost of filter installation is not justified in areas where no special dust or sand problems exist; where dusty roads, gravel pits, etc. are the locale of operation filters give a good account of themselves.

Fitted to the average passenger car, one company finds that filter mileage of 4000 to 5000 is the maximum that should be expected before changing oil and cartridge also. After such mileage for both oil and filter element, not enough acidity or sediment was present in this case to cause trouble, oil expense was reduced to 35 per cent of the cost when filters were not used, and the time when original rings must be replaced was extended an additional 10,000 miles, in the operator's opinion.

However, another company, which increased drain periods from 2000 to 4000 miles after installing filters, found that, after 1000 to 2000 miles, the filter was completely clogged, and thereafter the engine ran on dirty oil. An exhaustive test was made on about 40 trucks, using several different makes of filters both of the fuller's earth-cotton waste and the felt disc types. Average results showed little

Austin M. Wolf of New York, internationally known consulting authority on automotive engineering, whose report on "Filtering Fallacies" presented at the Detroit SAE meeting did much to clarify the knowledge of the functions and limitations of crankcase oil filters

important variation in the results obtained with the different types under the conditions under which the trucks were operated.

Filters offer serious problems in obtaining proper throughput in equipment of practicable size. Tests showed that even with an SAE 10 oil the flow rate at 15 degrees Fahr. is very low; heavier oils are correspondingly slower. Therefore intermittent operation in cold weather probably results in no oil passing through the filter, especially in commercial cars working on a stop-go schedule.

One of the greatest reasons for use of filters, Wolf finds, is the removal of metal particles which, if left in the oil will form soaps to catalyze varnish formation. He pointed out that lead and iron naphthenates are found in appreciable quantities in used oils; these same compounds are used as drying agents in paints, lacquers, etc., consequently their presence in the lubricating oil undoubtedly promotes lacquer formation. He called attention also to the fact that naphthenic oils of two to three acid number will not attack lead or cadmium, while an acid number of one in a paraffinic oil will produce corrosion. Also, the presence of even minute quantities of nitrogen compounds in a crankcase oil affects seriously the film strength of the oil, especially of "highly oily" oils, causing sudden breakdowns in practically all cases. Filters of the earth-cotton waste type will remove acidity for a certain length of time, but will not remove oxidation products to any appreciable extent, it was reported. Felt disc filters will remove neither.

Benefits to Fleet Operators From State Inspection Laws

The trend towards state legislation for compulsory motor vehicle inspection at regular intervals is of importance to oil companies as operators of automotive vehicles in delivery and transport service, as well as because of servicing possibilities opened up for the oil company by the operation of such laws.

The economic consideration of these laws from the standpoint of the owner and operator of automotive equipment was discussed at the recent SAE meeting in Detroit.

Today there are 24 states with laws of various kinds requiring periodic checking of vehicles using the public highways and there is every indication that this number will be increased in the near future, stated J. F. Winchester and J. J. Powelson of Standard Oil Co. of New Jersey, in a paper entitled, "Compulsory Safety Lane Testing from the Economic Viewpoint of Fleet Operators".

Winchester is manager of automotive equipment for the "Jersey" company, and a recognized authority on automotive transportation problems.

These authors declared it was the fleet operator's job to study operating conditions, performance and cost records, new vehicle designs, and other factors, in working out a system of periodic inspection and preventative maintenance which for his particular operation would give the lowest accident cost, the lowest combined cost of depreciation and maintenance and the least lost vehicle time due to repairs and accidents.

It was pointed out that such an operator is constantly striving to lower operating and unit delivery costs and that he is vitally concerned with the effect compulsory safety lane testing may have upon his operation, and must be concerned with the question of whether this inspection will be just an added nuisance and expense or whether it will produce worthwhile tangible or intangible benefits.

Much honest difference of opinion exists as to the most practical and effective type of periodic inspection, the authors point out, and there is no standard code containing all the specifications that a motor vehicle should meet with regard to brakes, headlights, steering and other components of the vehicle that have a definite relation to safety.

Analysis was given of the three rather separate and distinct compulsory inspection programs now in use; the state controlled and operated stations, the state controlled but privately operated stations, and the state controlled but city-operated depots.

Because state control and operation calls for considerable investment and a large number of employes, and the city-operated stations did not provide state-wide inspection, the plan for inspection by privately operated stations has proven most popular, it was reported.

Combinations of these plans, or modifications to meet the needs of vehicle owners are in use. For instance, Delaware was shown to have two fixed inspection stations or lanes in Wilmington, but for the remainder of the state checking is accomplished by moving a three-lane inspection facility from place to place throughout the state.

In discussing the New Jersey plan, which provides — under a statute effective Jan. 1, 1938 — for state control and operation of stations, Winchester and Powelson said the first year's receipts from the 50-cent inspection fee — twice a year — indicates the service will not only be self-supporting, but will allow a surplus to the state of about $250,000, or more than enough to cover the total initial investment.

It was believed these cost figures would interest the fleet operator, particularly because comparable testing equipment could not be installed at an investment as low as $1 per vehicle or competently operated at a cost as low as 50 cents per inspection — even for the largest fleet operated out of a single terminal.

Results of a questionnaire sent to a large number of representative fleet operators in New Jersey and Memphis — where city-operated inspection stations are used — asking for their reaction to the compulsory inspection, were discussed in this paper.

Eight fleet operators in New Jersey and three in Memphis furnished the average cost per truck inspection based on the following items: (a) Driving labor to and from testing station. (b) Mileage cost — tires, fuel, and repairs. (c) Cost of preparing vehicle for inspection — labor and materials not made for regular maintenance and inspection, and (d) Labor and material found necessary for the vehicle to pass the inspection.

The average cost of having a truck inspected once in New Jersey was shown as $7.50, with a low of $3 and a high of $18.85; while for Memphis the average was $2.60, the low $1.10 and the high $3.85. The average annual cost in New Jersey for the two inspections is $15, compared to an average total of $7.75 for the three inspections required a year in Memphis.

It was pointed out by the authors

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Patent Fuels and Color Corp.
Carew Tower, Cincinnati, Ohio

that if Item C were considered as covering work which should have been done anyway, then the average cost to fleet operators in New Jersey would be $3.50 for one inspection, or $7 for the year. The comparable figure in Memphis would be $1.25 and $3.75.

With one exception the fleet operators answering the questionnaire said this additional expense was justified, particularly because the outside check on maintenance methods was valuable. Three operators thought there was no reduction in accident or maintenance cost, as a result of this expense; one was doubtful and the others believed some savings were made.

In answering the question of whether the inspection routine was unreasonably strict and included items which have no bearing on increased safety, the replies were in the negative with one exception. One operator felt that wheel alignment and light tests should be eliminated. No fleet operator thought additional tests were necessary.

Some fleet operators reported the purchase of some testing equipment in preparing vehicles for checking by the state or city stations, and six believed equally good results could be obtained if the fleet operator were authorized to make his own tests. However, the general opinion was that it would not be economical for the operator to do this if he had to duplicate the state testing stations.

All operators agreed that a semi-annual state inspection is worthwhile and effective in reducing a number of serious accidents on the highways, but opinion was divided as to whether periodic inspection cut down overall maintenance cost.

Summarizing the case for and against compulsory state inspection from the economic standpoint of the fleet operators, the authors said:

"The fleet operator will undoubtedly be put to some additional expense per vehicle varying between rather narrow limits, depending upon the character of the fleet, operating conditions, etc., and his administrative personnel will have additional work in handling the necessary routine. To offset these two disadvantages we have the following:

"There is a definite possibility of making effective use of the expensive state testing equipment and trained personnel to check the quality and thoroughness of current maintenance work and to study possible changes in maintenance routine, at least with regard to brakes, wheel alignment and lights.

"In the past it has happened all too frequently that an operator has received an inadequate return for maintenance expenditures, whether employing his own mechanics or contracting with outside organizations. Arrangements can usually be made for inspections in the state stations more often than required by law. In some areas regular inspection every 30 to 60 days may be a means of reducing total maintenance by eliminating unnecessary work.

"If compulsory safety lane testing is conducted honestly, thoroughly and efficiently and is effective in reducing the number and lessening the severity of accidents the fleet of operators in common with all users of motor vehicles will share in many benefits and savings"

These benefits are listed as follows: 1. Lower accident repair cost; 2. Ultimate lower insurance cost; 3. Less lost vehicle time; 4. Better service to customer or trade; 5. Greater earning power per vehicle. (Drivers wages constitute about 50 per cent of the total vehicle operating cost, and unproductive driver's time when accidents occur represents serious loss); 6. Greater tire mileage due to better average wheel alignment; 7. Lower depreciation because of longer average vehicle life; 8. Eventual tax reduction due to lower public hospitalization cost and possible lower police cost.

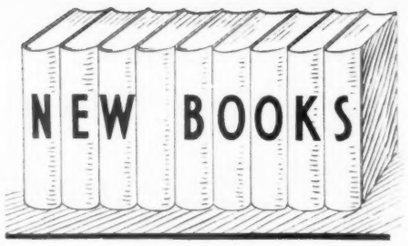
G. B. Dickey of Nashville, president of American Oil Co. of Tennessee, Inc., secretary of the newly-reorganized Tennessee Oil Men's Assn., composed of independent oil marketers which was scheduled to meet in Memphis on Jan. 23. The association maintains its headquarters at 507 American National Bank Bldg., in Nashville

New Jersey Oil Trade Elects Officers

NEWARK, N. J.—Officers of the New Jersey Oil Trade Association are looking forward to another active year, with monthly meetings of the association's directors planning expansion of activities.

At the recent annual banquet, Theodore W. Osbahr of Paterson, Solar Oil Co., was elected president for the second time. Lawrence A. Ryan of Newark, Fiske Brothers Refining Co., was chosen vice president, with Joseph H. Gunn of Newark, secretary. William Ulrich of Newark, American Oil & Supply Co., was re-elected treasurer.

Directors elected were: John Jones of Newark, Sun Oil Co.; Frank P. Gill of Linden, Adam Cook Sons; James F. Sheehan of Newark, Fiske Brothers Refining Co.; F. S. Mahoney of New York, Renick-Mahoney Oil Co.



Histories of Conservation

Since legal conceptions in the development of the principle of conservation of oil and gas have been so closely intertwined with the scientific knowledge on the subject, a great many operators in the oil industry will recognize as an extremely valuable contribution to the literature on conservation, a group of histories of conservation in the principal oil producing states, being published by the Section of Mineral Law of the American Bar Association.

The histories of the individual states have been prepared by those who have been actively engaged in the oil and gas industry and in the litigation arising over the conservation measures there.

"These histories, particularly with respect to Texas and Oklahoma, constitute original source material of great value for a study of governmental regulation of private industry," states Jas. L. Shepherd, Jr., of Houston, chairman of the Committee on Publications of the Mineral Law Section, in a foreword to the compilation.

"Here are vivid experiences disclosing the conflict between legislative, executive and judicial branches of government and the difficulty of protecting an industry and its members from unwise or arbitrary acts of governmental officials or agencies, be they executive, legislative or judicial. Here also are vivid experiences disclosing the conflict between federal and state governments, with indications of the benefits and dangers attending governmental regulations, whatever may be the system of regulation which in theory seems to be the better."

In connection with the legal histories of these several states, Texas, Oklahoma, Kansas, Arkansas, Louisiana, California, Mississippi, Michigan, New Mexico, is included a paper delivered by Prof. Walter L. Summers of the College of Law of the University of Illinois, before the last annual meeting of the Mineral Section, covering the modern theory and practical application of conservation statutes and the functioning of administrative bodies under such statutes.

While distribution of these histories of conservation to members of the Mineral Law Section and to officials in administrative bodies dealing with conservation matters has been arranged, a limited number of copies are offered for sale through the Lord Baltimore Press, Baltimore, Md., at $2.50 per copy.

Highway Service Stations For Truckers' Trade

Whitey's Truck Stop station at Manteno, Ill., catering to highway truckers. The house to the left is the bunk house where drivers may roll in for a few hours of sleep. Note the wide drives, about 400 feet frontage on Illinois route 49. This photo was sent to 25 trucking companies and 24 gave their business to Whitey's Station

By E. L. Barringer
N. P. N. Staff Writer

OVER-THE-ROAD trucks, transporting raw materials and finished merchandise from city to city and hauling livestock to packing plants, are creating a new type of highway service station catering to the petroleum and accessory needs of trucks and the food and sleeping requirements of their drivers.

The better type highway truck stations also are beginning to attract the gasoline and food business of passenger car drivers. Commercial travelers recognize that an attractive truck station usually means good food, well prepared, at reasonable prices and are dropping in for meals and a fill of gasoline. The outright tourist is becoming highway-wise and following the lead of the commercial traveler.

The modern highway truck station has its roots in the changes within the trucking industry. The day of the tough, hard-boiled driver is passing, and along with it the idea that a truck driver will swallow anything, so shovel out tough hamburger sandwiches, disreputable coffee, soggy pie and call it a meal.

A better type of driver now is manning the transports. Operators have a lot of capital tied up in their outfits, in the equipment and the load, and they seek competent drivers. The depression has contributed too, and among drivers today is a generous sprinkling of ex-railroad men, business men and teachers seeking a new way of making a living.

The highway truck station is making its main stand out in the open, near cities and towns. Here stations fulfill the first requirement for truck patronage, sweeping drives off the highway, with ample space at the rear to park trucks after they have been serviced at the pump island, while the driver rolls in for a little "shut eye." Spacious drives and parking space also appeal to passenger car drivers, tired of parking on city streets blocks from a restaurant.

Trucks have specific petroleum and accessory requirements. They need gasoline, usually bought in 25 to 75-gallon lots, some add-a-quart oil, a shot in the universal joint or water pump, replacement fuel pumps and generators, headlight bulbs, wiper blades and safety flares.

Truck drivers like "service," and that means cleaning the windshield, sweeping out the cab and the "service" of rolling up to the pumps, calling out the order, and having the truck taken care of and parked while they eat and sleep.

FOR the driver's personal comforts the prime requisites of a service station are good food, shower baths and clean sleeping accommodations. Drivers eat often, virtually at every stop, and they eat rather light for truck drivers, as a stomach full of heavy food induces sleep, the driver's worst enemy. They pay for their own meals, and any criticism of poor food or high prices comes right from the pocketbook.

The personal element in the operation of a truck station makes it fundamentally a business of personal management. Hence operations are often set up for a partnership, one man operating the station end, the other the restaurant; or a family affair, with

the wife in charge of the restaurant, the husband manning the pumps.

Personal management is required in the restaurant, to see that good quality foodstuff is purchased, prepared correctly and served attractively. Personal management is required to handle trucks at the pump island, to park the trucks, and to awaken the drivers on time.

Drivers like personal attention. Life is lonely bowling along the highway. When the truck driver stops he wants a cheery word from the man at the pump and the waitress back of the counter. He likes to be asked about his sick wife and children. He likes to be reminded that he has been missed if he has not been on that run lately. He likes to talk with other drivers. A sour faced salesman or waitress kills business like a measles sign on the door.

OPERATORS of trucks are after a high degree of responsibility at stations Manufacturers hauling their products to market in their own trucks, or common and contract carriers with large fleets will service trucks at their main terminals. But on the road these trucks have definite time schedules for arriving at destinations, and they stop at designated stations enroute. Here the operators place their "books." The driver records his stop and the station operator notes the arrival and departure time on the "book." Thus, the operator can locate any of his trucks enroute by telephoning the designated "book" service stations and checking the arrival and departure time, until the driver is found or the records indicate he is in trouble between two "book" stations.

The trend in highway stations catering to truck business is illustrated by Whitey's Truck Stop station at Manteno, Ill., just north of Kankakee, operated by Mr. and Mrs. Walter K. Kepner. The Kepners had been operating a truck station-restaurant of the Baron-Huot Oil Co. in Kankakee and last summer took over the Baron-Huot station at Manteno. From a gasoline gallonage of a few thousand a month the station within four months had a business approaching the 40,000-gallon mark.

The restaurant department is managed by Mrs. Kepner. Three cooks and three waitresses are employed, working eight-hour shifts. The food department is busy around the clock, starting with the breakfast trade picking up at 4 a. m. and lasting until 9:30 to 10 a. m. Then the dinner trade starts and continues until around 1:30 p. m. The only major lull of the day is during the afternoon. The supper trade starts around 5 p. m. and continues through the night.

Best sellers in the food line illustrate the driver's taste's tending away from the hamburger sandwich-coffee-piece-of-pie meal. Whitey's Station specializes in a baked ham dinner at 40 cents, and ham along with a steak dinner at 50 cents accounts for about 65 per cent of all meals served. A pork chop dinner at 40 cents is next in line. Menus are varied and the other principal meats are roast beef and pork, pork tenderloin, veal steak and hamburger. Then there are the sandwiches, with hamburger and ham the most popular.

Salads and vegetables are popular with the drivers, especially lettuce and tomato, and combination salads. In season the restaurant serves fresh vegetables. At other times a generous quantity of frozen vegetables are used, especially spinach, peas, and asparagus.

Now for dessert, and here is the real surprise. Pie of course is the favorite of the drivers, but not apple or any of the standard kinds. Nope, it is a fruit base pie topped with whipped cream.

Mrs. Kepner does all the food buying, and keeps a close supervision over the preparing and serving of orders. She is an avid reader of restaurant trade journals, seeking ideas on management and menus that she can adapt to her own business.

The Kepners keep detailed accounting records which show the restaurant accounting for 35.1 per cent of the station's total sales. The check average varies from 27 to 30 cents, a high average considering all the small sales of cups of coffee and sandwiches.

The station's sleeping accommodations are in a house apart from the station-restaurant building. The house was part of the property purchased some years ago by Baron-Huot for the station development.

A LARGE room on the first floor was converted into a dormitory, with double iron beds, sleeping 20 persons. Bed linen is changed when necessary, at least once a week. The room is cleaned daily and fumigated every Sunday morning. Pillows are furnished by the drivers. The pillow-carrying custom is a hangover from the days when drivers might prefer to sleep in the truck cab rather than risk holing in some disreputable bunk house. With cleaner accommodations now available the cab sleeping practice has virtually been abandoned.

The customary sleeping time is one or two hours. Manteno is close enough to Chicago so drivers can hole in after midnight, get a little sleep and arrive in the city at dawn. Or drivers can load in the late afternoon, make Manteno in the early evening for supper and some sleep, then drive through the night for a morning arrival in southern Illinois or St. Louis.

To call the drivers on time the station has a call board in the station office and each bed is assigned a number. The man on duty assigns a driver to a bed, and on the call board notes the hour for the call, all calls being on the hour. Then each hour the station salesman checks the board, and goes direct to the bed to call the driver without disturbing other sleepers.

A shower bath is installed in the bunk house. In another room is the stove and the hot water heater, and this room is being outfitted with tables and chairs as a recreation room. On the second floor the Kepner's have store rooms for canned foodstuff and accessories, and their own office.

Mr. Kepner has the management of the service station department. The

Mr. and Mrs. Walter K. Kepner, who drove as far as Memphis to solicit truck business for their highway truck station at Manteno, Ill. Mrs. Kepner is in charge of the restaurant, Mr. Kepner of the service station

petroleum products marketed are gasoline, motor oil, and four types of grease, universal joint, water pump, cup and chassis.

The parts department has five types of fuel pumps, these cover all makes of trucks, and generators for Chevrolet, International, Ford, Federal, Dodge and Diamond T trucks. The station purchased outright one each of these 11 types of fuel pumps and generators. Sales are replacements, and daily the pumps or generators taken in on exchange are replaced through a Kankakee parts company.

The accessory line includes lamp bulbs, flashlights, sleet removers, stop leak, tire gauge, rear view and side arm mirrors, valve cores, wiper arms and blades, tape, shellac, tube patches, heater switches, gas tank caps, spark plugs, polish, radiator cleaner, polish cloth, dust cloth, insecticide, clearance lamps, reflectors, electric and kerosine lanterns, defroster fans, fog lights, radiator caps, brake fluid, flares, flags, and fuses.

Twenty sizes of fan belts are stocked. They are 104, 105, 111, 115, 119, 418 643, 648, 652, 653, 655, 656, 659, 660, 666, 667, 668, 700, 726, and 734. All tire sizes are stocked from 4.75-19 through 9.00-20. Batteries from 13 through 19 plate sizes are carried.

The accounting records show that 64.9 per cent of total sales are in the service station. Of the station sales the break-down is as follows:

	Per Cent
Gasoline	78.5
Ethyl gasoline	1.8
Oil and grease	4.0
Accessory and parts	1.7
Tire and tubes	13.0
Tire repairing, patching	1.0

Some miscellaneous items are sold in the restaurant, and are included in the restaurant sales. These are cigarets in a vending machine, package peanuts and bar candy, cigars, smoking and chewing tobacco, aspirin, and gloves. The station used to sell only 15 and 25-cent cloth gloves. Then a line of $1 leather gloves was stocked and three dozen pair were sold in six weeks. Oddly enough glove sales show that driver's have small hands, sizes 8 and 8½ being the best sellers.

A month after taking over the Manteno station the Kepners went on a sales tour. They heard three truck lines were planning to change "book" stations. Calls were made on three trucking companies in Memphis, Anna, Ill., and Cape Girardeau, Mo. All three companies have put their "book" in Whitey's Station, representing about 10 trucks stopping daily.

While on this trip the Kepners observed names of other trucking lines on passing trucks, and worked up a mailing list of 25 companies. Two photographs were taken of the station, and these with a sales letter describing the station's facilities were sent to the list. The 25 mailings resulted in the station getting the business of 24 companies, amounting to about 35 trucks daily.

The station has a service truck that aids in getting business. Mr. Kepner covers the highway for about 25 miles in each direction, delivering tires, tubes or parts as needed when a truck breaks down.

The Kepners spend long hours each day around the station, giving their personal attention to the operations. Both have exceedingly long memories for details that stand them in good stead in greeting the customers.

Another personal service is Mr. Kepner's bailing drivers out of Chicago speed traps. Cargoes have to move out on time, and delays are costly. If a customer gets in a jam with the law Mr. Kepner hops up to the speed trap, gets the driver out on the road again, and takes the responsibility of handling the details.

Further items of personal attention practiced by the Kepners are to send a card when they learn of a driver being ill. If there is a death in the driver's family they send a card of sympathy. If a driver is injured they send a carton of cigarets and a card. And seldom does a driver fail to mention receiving the card or cigarets on his next stop at Whitey's.

Then, on Thanksgiving day, the Kepners treated all drivers that stopped to a free turkey dinner.

TRADEMARKS

The following are trademark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Munsey Building, Washington, D. C., trademark specialists.

Published Dec. 6, 1938

ORION. Ser. No. 404,238. The Texas Company, New York City. Filed March 18, 1938.
For lubricating oils.

Representation of a hat, a sombrero, and words "Made in the West for Use in the West." Ser. No. 397,062. Yale Oil Corporation, Billings, Mont. Filed Sept. 2, 1937.
For gasoline and lubricating oils and greases.

* * *

Published Dec. 13, 1938

POLY. Ser. No. 370,119. Phillips Petroleum Company, Bartlesville, Okla. Filed Oct. 7, 1935.
For refined, semi-refined and unrefined oils and greases made from petroleum.

"OIL CITY." Ser. No. 411,309. Oil City Tank & Boiler Company, Oil City, Pa. Filed Oct. 5, 1938.
For water heating and steam generating boilers heated by coal, gas and oil.

GLASS BESTOS. Ser. No. 411,360. Allbestos Corporation, Philadelphia, Pa. Filed Oct. 7, 1938.
For oil burner wicking.

* * *

Published Dec. 27, 1938

ZEPHIR. Ser. No. 412,119. Tokheim Oil Tank and Pump Company, Fort Wayne, Ind. Filed Oct. 27, 1938.
For measuring and computing oil and gasoline pumps.

GARGOYLE HEAD on design. Ser. No. 411,361. American Bosch Corporation, Springfield, Mass. Filed Oct. 7, 1938.
For fuel injection equipment, comprising fuel injection pumps, oil filters, etc.

FOUR SEASONS. Ser. No. 412,118. Tide Water Associated Oil Company, New York. Filed Oct. 27, 1938.
For gasoline, lubricating oils and greases.

* * *

Published Jan. 3, 1939

GORILLA Brand and picture of a gorilla with club in hand. Ser. No. 402,836. William John Zink, Downey, Calif. Filed Feb. 7, 1938.
For gasoline.

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State's 'Lab' on Wheels Tests Motor Fuel at Station Doorway

This traveling laboratory of Illinois state authorities will stop at all service stations in Chicago to run tests on gasoline and kerosine sold there. This is said to be the first mobile laboratory in the country

Gasoline and kerosine will now be inspected by state authorities right in Chicago service stations, in the first mobile testing laboratory of the motor fuel tax and oil inspection divisions of the Illinois Department of Finance.

Tests are to show whether non-taxable petroleum products are being mixed with gasoline and whether the kerosine sold meets state requirements. The service station tests will be in addition to the department's customary refinery and tak car inspections.

The mobile laboratory will make tests at many of the 5000 service stations in Chicago. About 35 minutes will be required for a test, it is said.

If gasoline is found to be below the state's specifications, then the pump will be labeled with the department's large diamond shaped, "sub-standard" placard, which will remain on the pump until future tests show the motor fuel meets the state's standard.

The laboratory is a trailer equipped to run distillation, gravity, color and flash tests. Samples will be taken from a station's dispensing units and the tests immediately run while the testing unit is right at hand.

The trailer is 17 feet long, 6.5 feet wide and six feet two inches inside maximum height. There are four distillation units, operated on liquefied petroleum gas. The trailer also has a 100-pound ice chest, water tanks, sink, drawer space, heating stove, and shelf and closet space. Two operators will be with the unit. Four distillation tests can be run on gasoline at the same time.

The department has been testing service station samples for some months, in the department's permanent laboratory. So far, it is reported, there has been no evidence of adulteration of motor fuel.

Other mobile laboratories are expected to be built later and tests on products made at all service stations in the state.

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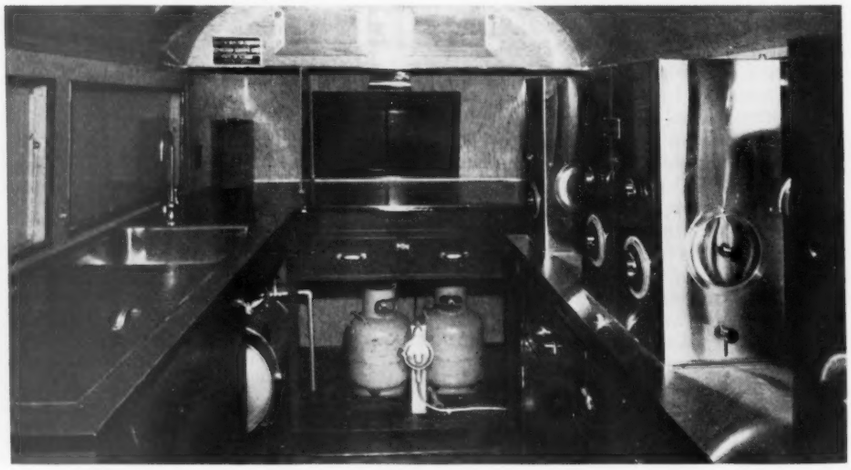
It's Col. Brecke Now

MILWAUKEE, Jan. 16. — It is "Col." Brecke now, the same Roy L. Brecke who is executive secretary of the Wisconsin Petroleum Association.

The title was granted recently by Gov. Julius P. Heil, Milwaukee tank manufacturer and now Wisconsin's governor, and Brecke is Colonel Number One of the governor's staff.

Brecke was in charge of the Heil state campaign, has been the oil association secretary for many years and is prominent in American Legion activities.



Four distillation units are on the right in this mobile laboratory of the Illinois oil inspection division. To the left are the ice chest, sink with pressure water tanks beneath, and the flash testing equipment at the rear left corner. Liquefied petroleum gas tanks are on the floor at the rear center

Oil Concerns Join in Station To Serve Motorists at Fair

LOS ANGELES Jan. 21. — Facilities for accommodating the thousands of motorist visitors to the Golden Gate International Exposition opening at San Francisco Feb. 18, will provide probably the largest parking lot in the world and also one of the most unique service stations.

At the north end of Treasure Island —a 400 acre, man-made exposition site in San Francisco Bay which will be used as an airport following the show —80 acres have been paved and interlaced with eight avenues, so arranged it will be possible to handle up to 12,000 automobiles at one time without a traffic jam.

Available space on the island did not permit separate service stations to be built by the marketing companies, so an arrangement was worked out whereby the oil companies will merge their identities in a single product of motor fuel, offered in two grades—Treasure Island gasoline and Treasure Island Ethyl; also Treasure Island motor oil in the conventional grades.

The station building will be triangular in shape, with two 16-foot cantilever pump island canopies extending out on opposite sides, much like wings on an airplane. The open lubritorium and service section, 40 feet long, extends back at right angles to these canopies. In the center of these extensions is a 20-foot square salesroom, which is surmounted by an octagonal tower. The tower, reached by an ornamental stairway, will serve as office space.

The station building will be built of porcelain enamelled steel; all flat surfaces are in cream, with a broad base band of blue, and horizontal, chrome-finished strips and plate glass adding other distinctive effects. Floodlighting and high-power interior and undercanopy lights will be used in display illumination.

Island driveways, arranged to permit easy entrance and exit and fast service, will be equipped with six computing pumps, their finish in harmony with that of the station. Chrome plating will be used to "doll-up" such work-a-day equipment as the air-compressor, three electric lifts, and lubricators and hand-guns.

Gasoline storage will be provided by four underground tanks at the station, and a 45,000-gallon container near the edge of the island. This service station is located at the main entrance to the parking area.

Companies participating in supplying the station are General Petroleum Corp., Gilmore Oil Co., Richfield Oil Co., Rio Grande Oil Co., Seaside Oil Co., Shell Oil Co., Signal Oil Co., Standard Oil Co. of California, Sunset Oil Co., The Texas Co., Tidewater Associated Oil Co., Union Oil Co., and Ethyl Gasoline Corp.

The station operators, Bay Auto Parks, Inc., are under contract to charge the same prices for products and services as prevail in San Francisco and neighboring cities.

Parking charge is expected to be 50 cents a day, with car owners doing the parking under direction of six supervisors, who will cover the parking area on motor-propelled scooters.

Corn Loans Supplying Cash for Farm Bills

CHICAGO, Jan. 27. — The federal 1938 corn loans offer farmers who participated in the program another source of revenue to pay their petroleum product and other bills.

To determine what farmers are taking out loans on their corn the oil jobber can inquire at the county soil conservation office and at his bank. Loans are made by the federal government's Commodity Credit Corp., but checks would clear through the local bank.

Iowa and Illinois state association bulletins have called attention to these corn loans and advised jobbers to watch their farm accounts to be able to make collections as soon as any farmer customer receives his loan.

A corn loan can be obtained by any farmer who kept within his acreage allotment. A farmer participating in the program had his farm checked by a soil conservation agent and received an allotment of acres to be planted in corn, the loan being based on the average yield from these allotted acres.

The corn must be of good grade, properly stored, and the Commodity Credit Corp. then will loan 57 cents on the bushel, the loan to be repaid July 1, 1939.

With corn now selling below 57 cents on the market it is reported that federal corn loans are attractive to eligible farmers. These farmers can buy corn for feeding on the market, and seal their own corn for a loan.

Farmers who participated in the 1938 corn conservation program are to be paid, for keeping the land out of corn production, about 10 cents a bushel on what would have been the average yield from the acreage taken out of corn production. This conservation payment has not been made yet.

Another corn loan is in progress for the 1939 crop. Work is being done on allotments, but no price has been set for corn loans. This year's farm program, however, is unsettled and the program may be amended or changed entirely by this Congress.

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Markets

Mid-Continent

TULSA, Jan. 23.—Supplies of Mid-Continent gasoline suitable for use as base stock for the new 67 octane leaded "third grade" gasoline were more closely held last week, suppliers reported. Some inter-refinery purchases of this type gasoline were reported late in the week; volume and prices paid could not be learned.

A supplier of Oklahoma 62 octane and below gasoline early last week reported withdrawing his 3.125-cent quotation. Other suppliers reported quotations ranging from 3.625 to 4.25 cents for this grade.

A mid-western jobber reported the purchase of one car of 72 octane leaded gasoline from an Oklahoma refiner Jan. 18 at 4 cents. The refiner said to have made the sale denied having made any open spot sales at that price.

Quotations for 70-72 octane gasoline reported by Oklahoma refiners continued to range from 4.125 to 5 cents.

Grade 26-70 natural gasoline prices were unchanged at 2.75 cents as buying interest "perked" up, manufacturers said. Offerings, however, still outdistanced deliveries, they said.

Reclassification of 600 s.r. stock reported by one supplier resulted in withdrawal of his 7.5-cent quotation for dark stock and posting of 7.5 cents for olive green oil. Another supplier of 600 s.r. olive green oil reported quoting 6.5 cents.

California

LOS ANGELES, Jan. 21. — No changes were reported in posted prices in Pacific Coast petroleum markets the past week but indications were that in the lower grades of burning oils, as well as in refined products, concessions were made to meet competition.

Japanese interests had inquiries out for a full cargo of Grade B diesel oil, which they were endeavoring to get at less than the current quotations of $0.95 per barrel. They were reported to have contracted for the cargo but no information could be secured as to price paid. It was considered questionable whether any supplier who had the necessary stock and shipping facilities would be willing to make any price concession at this time.

In the Los Angeles Basin, wholesale and retail gasoline prices generally were reported unchanged. Some independent refiners were said to be selling truck and trailer loads of gasoline to truckers, who, although acting as jobbers, charged only trucking rates for the gasoline they distributed. This resulted in margins ranging up to 7 cents per gallon, which the service station operator usually shared with his retail customer by cutting under the canopy, according to reports. One or two independent refiners were delivering third grade gasoline at 10.75 cents a gallon, including 4 cents tax, it was said.

Gulf

NEW YORK, Jan. 23.—Cargo markets at the Gulf were featureless the third week of January, with no open market cargoes reported sold.

Trade attention centered on reports from France and Roumania of negotiations between these two countries for approximately 500,000 tons of petroleum products to be shipped from Roumania to France during the balance of the year.

While reports were meagre up to the end of the week, several traders said they believed that the contract had been closed. One said he had information that the contract called for prices to be seven per cent over prices at the U. S. Gulf.

With totalitarian Germany and Italy bartering for a considerable portion of their petroleum supply from Mexico, several traders said they feared that the Gulf was losing another channel of distribution by this deal reported to have been made by France with Roumania.

Prices of all products were reported unchanged at the Gulf during the past week; there were occasional unconfirmed reports that low octane gasoline could be had on firm offer at less than 4.375 cents.

Mid-Western

CHICAGO, Jan. 23.—Offerings of 62 octane and below gasoline in the open market were more limited at the close of the past week, according to several Chicago tank car marketers, due, it was said, to considerable major-company buying of this products for leading purposes. Weather conditions throughout the week generally were unfavorable to motoring and unconfirmed reports of price shading, particularly on 70-72 octane gasoline, were encountered. One tank car marketer reported selling 2 cars of 70-72 octane at 3.875 cents, around the middle of the week. Other quotations reported for this grade ranged up to 4.625 cents. Later in the week the marketer reporting the 3.875-cent sale said he had advanced his quotation to 4 cents.

Inventories of Michigan straight run gasoline for the central refinery district increased 3000 barrels while stocks of 70-72 octane gasoline declined 1000 barrels, according to reports. Quotations reported for straight run gasoline ranged from 3.75 to 4.5 cents; 70-72 octane gasoline was being offered at 7.25 to 7.75 cents.

No changes were reported in kerosine quotations either by Michigan refiners or Chicago traders.

One tank car marketer reported selling 15 cars of range oil at 3.5 cents, down 0.125 cent from his previous quotation. Other quotations reported for this product ranged up to 4 cents.

N.P.N. Gasoline Index

	Dealer T.w.	Tank Car
	Cents per gal.	
Jan. 23	9.56	5.40
Month ago	9.61	5.41
Year ago	10.20	5.96

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 12 wholesale markets for regular-grade gasoline.

Pennsylvania

CLEVELAND, Jan. 23. — Wax was quoted higher in western Pennsylvania last week, and upper field gasoline prices also were higher. A number of refiners also reported higher bright stock quotations.

Advances of 0.05 to 0.1 cent per pound were reported by all refiners quoting the product, and as the week ended, quotations were at 2.45 cents per pound, New York. Demand, especially for export, was unusually heavy, refiners said.

An upper field seller who, the second week in January had reduced his quotations for 65 octane and 70 octane gasolines 0.75 cent to 5.5 cents and 5.75 cents for the two grades, respectively, last week said he had advanced his quotations 0.5 to 0.75 cent to 6 cents and 6.5 cents, respectively.

Three refiners reported marking up their 25 pour test bright stock quotations 1 cent to 15 cents; another said he had advanced his price 0.5 cent to 14.5 cents. Three other refiners continued to report they were offering this grade at 14 cents.

Eastern

NEW YORK, Jan. 23.—The third week of January was pretty much of a repetition of the first two weeks of the year in gasoline markets along the eastern seaboard.

Wholesale prices in all markets were reported unchanged, but reports of price shading persisted. These reports, however, were scattered, and traders said they did not indicate general lowering of prices but merely occasional "distress" offerings.

Trading in the wholesale markets reflected the absence of good consumer

demand and open market trading was at a virtual standstill, which probably accounted for the outcropping of "shaded" offerings, sellers said. Movement of gasoline against contracts also was "limited," they said.

Wax

NEW YORK, Jan. 23. — Scale wax prices were reported slightly higher by some suppliers, both at the Gulf and at New York, the week ended Jan. 21.

Only a few of the active suppliers said they were still quoting white crude scale grades at 2.4 cents per pound. The majority said they were asking 2.5 cents.

Fully refined grades continued featureless, with no changes reported in prices. Demand for fully refined has held up relatively well, according to reports.

Fuel Oil

CHICAGO, Jan. 23. — Mild weather over the past week continued to curtail both spot and contract movement of light fuels, according to resellers here. Occasional unconfirmed reports of price shading, principally on No. 1 p.w. distillate, were encountered. Quotations reported for this product ranged from 3.5 to 3.875 cents.

Inventories of Michigan No. 1 p.w. distillate declined 10,200 barrels during the week, according to reports. Refiners said a considerable amount of this material was shipped north.

One Chicago marketer reported reducing his quotation on No. 5 industrial fuel 12.5 cents to $0.575 per barrel.

A Michigan refiner reported reducing his quotations on 500-700 vis. and 300-500 vis. fuels 0.125 cent to 2 cents and 2.25 cents, respectively, and on 100-300 vis. fuel, 0.25 to 2.375 cents.

* * *

TULSA, Jan. 23.—An Oklahoma refiner last week reported reducing his 24-26 fuel oil quotation from $0.925 to $0.85-90 per barrel. Two refiners reported quoting No. 6 fuel oil at prices ranging from $0.30 to $0.45 per barrel.

Mild weather continued to hamper light fuel oil movement, and no changes were made in quotations, refiners said.

* * *

NEW YORK, Jan. 23. — Fuel oils were reported in good demand in all markets along the eastern seaboard the week ended Jan. 21 by both suppliers and distributors.

Colder weather was said to have taken up the slack which had appeared in several of the key markets on occasion, and as the week ended several sellers said they were contemplating advancing their prices. They pointed out that the return from wholesale fuel oil sales at northern markets has been negligible during the heating season, with high boat rates and a relatively tight market for light fuel at the Gulf.

Several others, however, said they believed that the recent decline in boat rates would prevent any rise in light fuel oil prices in northern markets.

Promotion in Union Oil Sales Branch

LOS ANGELES, Jan. 21. — Appointment of A. C. Stewart as assistant vice-president in charge of sales, and W. A. Newhoff as manager of sales was recently announced by Union Oil Co. of California.

Stewart has been manager of Union Service Stations—retail marketing division of the company—for the past two and one-half years and has been actively identified with the Union Oil sales organization since 1928. He graduated from Stanford University as a mechanical engineer and attended the Harvard School of Business Administration. He is a grandson of the founder of Union Oil Co.

Newhoff has been affiliated with this company for the past 19 years. In 1929 he was made assistant district manager at Los Angeles, and four years later was appointed manager of the company's central division, with headquarters in San Francisco. In 1937 he was again transferred to Los Angeles, this time as manager of refined oil sales. Early in 1938 he became assistant director of sales.

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REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel of 42 gallons, wax and petrolatums in cents per pound in barrels, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Gasoline

Prices Effective	Jan. 23	Jan. 16
OKLAHOMA		
U. S. Motor: (Octane L-3)		
62 oct. & below	3.625– 4.25	3.625– 4.25
63-66 oct.	3.875– 4.50	3.875– 4.50
67-69 oct.	4.125– 4.625	4.125– 4.625
70-72 oct.	4.125– 5.00	4.125– 5.00
60-62, 400 e.p.	3.25 – 3.75	3.25 – 3.75
WESTERN PENNA.		
Bradford-Warren.		
Motor gasoline:		
U. S. Motor:		
Min. 65 oct.	6.00 – 6.75	5.50 – 6.75
Min. 70 oct.	(f) 6.50	(f) 5.75 – 6.50
"Q" gasoline	(e&g) 6.75	(e&g) 6.75
Other districts:		
Motor gasoline:		
U.S. Motor (58-62° gravity):	4.00 – 5.00	4.00 – 5.00
"Q" gasoline	(g) 6.25– 7.00	(g) 6.25– 7.00
CENTRAL MICHIGAN (a)		
Str.-Run Gasoline	(c) 3.75 – 4.50	(c) 3.75– 4.50
U. S. Motor: (Octane L-3)		
67-69 octane	(e) 6.75	(e) 6.75
70-72 octane	7.25 – 7.75	7.25 – 7.75

Prices Effective	Jan. 23	Jan. 16
CALIFORNIA (3c tax to be added if used in state)		
U. S. Motor:		
54-58 gravity, for in-state shipment	6.75 – 9.25	6.75 – 9.25
54-58 gravity, for out-side state shipment	6.75 – 9.00	6.75 – 9.00
58-61 gravity, 375-400 e.p., 65 oct. & above	7.75 – 9.75	7.75 – 9.75
N. TEX. (b)		
U. S. Motor: (Octane L-3)		
62 oct. & below	3.625– 4.25	3.625– 4.25
63-66 oct.	4.125– 4.75	4.125– 4.75
67-69 oct.	4.25 – 4.50	4.25 – 4.50
70-72 oct.	4.375– 4.875	4.375– 4.875
60-62, 400 e.p.	3.625	3.625
KANSAS (For Kansas destinations only)		
U. S. Motor: (Octane L-3)		
62 oct. & below	3.875– 5.00	3.875– 5.00
67-69 octane	(h) 4.25 –5.50	(h) 4.25 –5.50
70-72 oct.	4.625– 5.875	4.625– 5.875
W. TEX. (b)		
U. S. Motor: (Octane L-3)		
62 oct. & below	3.75 – 4.50	3.75 – 4.50
63-66 oct.	4.125– 4.75	4.125– 4.75
67-69 oct.	4.375– 5.125	4.375– 5.125
70-72 oct.	4.625– 5.00	4.625– 5.00

Prices Effective	Jan. 23	Jan. 16
CENTRAL WEST TEXAS (Prices to truck transports)		
U. S. Motor Gasoline: (Octane L-3)		
62 oct. & below	(h) 4.00 –4.25	(h) 4.00– 4.25
63-66 octane	(e) 4.75	(e) 4.75
66-70 octane	(e) 5.50	(e) 5.50
E. TEX.		
U. S. Motor Gasoline, (Octane L-3)		
67-69 oct.	(e) 4.25	(e) 4.25
70-72 oct.	(e) 4.50	(e) 4.50
60 62. 400 e.p.	3.75 – 4.00	3.75 – 4.00
N. LA (For shipment to La. & Ark.)		
U. S. Motor: (Octane L-3)		
62 oct. & below	4.125– 4.375	4.125– 4.375
63-66 oct.	(e) 4.375–4.625	(e) 4.375–4.625
67-69 oct.	(e) 4.625–4.875	(e) 4.625–4.875
70-72 oct.	4.875– 5.375	4.875– 5.375
ARKANSAS (F.o.b. Ark. plant of one refiner, for shipment to Ark. & La.)		
U. S. Motor: (Octane L-3)		
62 octane & below	4.00	4.00
67-69 oct.	5.125	5.125
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
U. S. Motor	7.25	7.25
Above 65 oct.	7.50	7.50

Continued on next page

(a) Prices f.o.b. Central Michigan refinery group basis, for shipment within Mich. Shipments may originate at plants outside Central group. (b) For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments. (c) Excluding Detroit shipment. (d) Nominal. (e) One refiner quoting. (f) Two suppliers quoting. (g) To resellers holding licenses. (h) Two refiners quoting. (i) No quotations reported.

MID-WESTERN TANK CAR MARKET

Prices in this Midwestern Tank Car Market table are gathered from refiners and tank car marketers or brokers from their offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight rate basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Generally when prices are quoted in this Chicago market, the origin of the material is not known at the time the quotation is given, oftentimes even with the quoting refiners who have refineries in more than one refining district. All other gasoline prices are given by and for the particular refining district where the material is made and from which it is shipped.

Gasoline

Prices Effective	Jan. 23	Jan. 16
U. S. Motor: (Octane L-3)		
62 oct. and below	3.25 – 4.00	3.125– 4.00
63-66 oct.	3.625– 4.50	3.625– 4.50
67-69 oct.	3.75 – 4.50	3.75 – 4.50
70-72 oct.	4.00 – 4.625	4.00 – 4.625

Kerosine

41-43 gravity, w.w.	3.75 – 4.125	3.75 – 4.125
42-44 gravity, w.w.	3.75 – 4.375	3.75 – 4.375

(a) Nominal.

Fuel and Gas Oils

Prices Effective	Jan. 23	Jan. 16
No. 1 p.w.	3.50 – 3.875	3.50 – 3.875
No. 1 straw	3.50 – 3.75	3.50 – 3.625
No. 2 straw	3.25 – 3.625	3.375– 3.625
No. 3	3.125– 3.375	3.125– 3.375
No. 5	(a) $0.575–$0.65	(a) $0.60–$0.70

Prices Effective	Jan. 23	Jan. 16
No. 6	(a) $0.30–$0.45	(a) $0.30–$0.45
U. G. I. gas oil	(a) 2.625–2.875	(a) 2.625–2.875
Range oil	3.50 – 4.00	3.50 – 4.00

Naphtha and Solvent

Stoddard solvent	5.875	5.875
Cleaners' naphtha	6.375	6.375
V. M. & P. naphtha	6.375	6.375
Mineral spirits	5.375	5.375
Rubber solvent	6.375	6.375
Lacquer diluent	7.375	7.375

Daily range of gasoline prices as reported in PLATT'S OILGRAM (Week Ended Jan. 20, 1939)

U. S. Motor, (Octane Number determined according to L-3 Method in Okla., Texas and Mid-Western Districts):	Jan. 16	Jan. 17	Jan. 18	Jan. 19	Jan. 20
62 octane and below:					
Oklahoma	3.625– 4.25	3.625– 4.25	3.625– 4.25	3.625– 4.25	3.625– 4.25
(b) North Texas	3.625– 4.25	3.625– 4.25	3.625– 4.25	3.625– 4.25	3.625– 4.25
West Texas	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50
Mid-Western (Group 3 basis)	3.125– 4.00	3.125– 4.00	3.125– 4.00	3.25 – 4.00	3.25 – 4.00
63-66 octane:					
Oklahoma	3.875– 4.50	3.875– 4.50	3.875– 4.50	3.875– 4.50	3.875– 4.50
(b) North Texas	4.125– 4.75	4.125– 4.75	4.125– 4.75	4.125– 4.75	4.125– 4.75
West Texas	4.125– 4.75	4.125– 4.75	4.125– 4.75	4.125– 4.75	4.125– 4.75
Mid-Western (Group 3 basis)	3.625– 4.50	3.625– 4.50	3.625– 4.50	3.625– 4.50	3.625– 4.50
67-69 octane:					
Oklahoma	4.125– 4.625	4.125– 4.625	4.125– 4.625	4.125– 4.625	4.125– 4.625
(b) North Texas	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50	4.25 – 4.50
West Texas	4.375– 5.125	4.375– 5.125	4.375– 5.125	4.375– 5.125	4.375– 5.125
East Texas	(c) 4.25	(c) 4.25	(c) 4.25	(c) 4.25	(c) 4.25
Mid-Western (Group 3 basis)	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50	3.75 – 4.50
70-72 octane:					
Oklahoma	4.125– 5.00	4.125– 5.00	4.125– 5.00	4.125– 5.00	4.125– 5.00
(b) North Texas	4.375– 4.875	4.375– 4.875	4.375– 4.875	4.375– 4.875	4.375– 4.875
West Texas	4.625– 5.00	4.625– 5.00	4.625– 5.00	4.625– 5.00	4.625– 5.00
East Texas	(c) 4.50	(c) 4.50	(c) 4.50	(c) 4.50	(c) 4.50
Mid-Western (Group 3 basis)	4.00 – 4.625	4.00 – 4.625	4.00 – 4.625	3.875– 4.625	4.00 – 4.625
Motor Gasoline, 60-64 octane:					
New York harbor	(a) 6.00– 6.25	(a) 6.00– 6.25	(a) 6.00– 6.25	(a) 6.00– 6.25	(a) 6.00– 6.25
Philadelphia district	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50
Baltimore district	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50
Motor Gasoline, 65 octane & above:					
New York harbor	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50
Philadelphia district	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50
Baltimore district	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50	(a) 6.00– 6.50
U. S. Motor, 58-62°:					
Bradford-Warren (Western Penna.)	(e)	(e)	(e)	(e)	(e)
Other districts (Western Penna.)	4.00 – 5.00	4.00 – 5.00	4.00 – 5.00	4.00 – 5.00	4.00 – 5.00
Motor Gasoline, Min. 65 octane:					
Bradford-Warren (Western Penna.)	5.50 – 6.75	5.50 – 6.75	6.00 – 6.75	6.00 – 6.75	6.00 – 6.75
Other districts (Western Penna.)	.....	.....	.....	.....	.....
Motor Gasoline, Min. 70 octane:					
Bradford-Warren (Western Penna.)	(f) 5.75– 6.50	(f) 5.75– 6.50	(f) 6.50	(f) 6.50	(f) 6.50
"Q" Gasoline:					
Bradford-Warren (Western Penna.)	(c&d) 6.75	(c&d) 6.75	(c&d) 6.75	(c&d) 6.75	(c&d) 6.75
Other Districts (Western Penna.)	(d) 6.25– 7.00	(d) 6.25– 7.00	(d) 6.25– 7.00	(d) 6.25– 7.00	(d) 6.25– 7.00

(a) Nominal. (b) For shipment to Texas and New Mexico destinations: Group 3 prices are quoted on northern shipment. (c) One refiner quoting. (d) To resellers holding licenses. (e) No price reported. (f) Two suppliers quoting.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon except heavy fuel oils in dollars per barrel of 42 gallons, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Natural Gasoline

(Prices to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

Prices Effective	Jan. 23	Jan. 16
F.O.B. GROUP 3		
Grade 26-70	2.75	2.75 – 3.00
F.O.B. BRECKENRIDGE		
Grade 26-70	2.75	2.75 – 3.00
CALIFORNIA (F.o.b. plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	6.25 – 6.50	6.25 – 6.50

Kerosine

WESTERN PENNA.		
Bradford-Warren:		
45 gravity w.w.	5.00 – 5.25	5.00 – 5.25
46 gravity w.w.	(e) 5.25– 5.375	(e) 5.25– 5.375
Other districts:		
45 gravity w.w.	4.625– 5.00	4.625– 5.00
46 gravity w.w.	5.00 – 5.125	(k) 4.875–5.125
47 gravity w.w.	4.875– 5.25	4.875– 5.25
CENTRAL MICHIGAN (a)		
47-49 gravity w.w.	5.05 – 5.30	5.05 – 5.30
OKLAHOMA		
41-43 gravity w.w.	3.875– 4.25	3.875– 4.25
42-44 gravity w.w.	4.00 – 4.625	4.00 – 4.625
KANSAS (For Kansas destinations only)		
41-43 gravity w.w.	(e) 4.25	(e) 4.25
42-44 gravity w.w.	4.375– 4.50	4.375– 4.50
N. TEX. (b)		
41-43 gravity w.w.	4.25 – 4.50	4.25 – 4.50
CENTRAL WEST TEXAS (Prices to truck transports)		
41-43 gravity w.w.	(f)	(f)
N. LA. (For shipment to La. and Ark.)		
41-43 gravity w.w.	4.00 –4.125	4.00 – 4.125
ARK. (F.o.b. Ark. plant of one refiner, for shipment to Ark. and La.)		
41-43 gravity w.w.	4.50	4.50
CALIFORNIA		
40-43 gravity w.w.	5.00 – 7.00	5.00 – 7.00

Gas *and* Fuel Oils

WESTERN PENNA.		
Bradford-Warren:		
36-40 gravity	4.25 – 4.375	4.25 – 4.375
Other districts: (Excluding Pittsburgh District Prices)		
36-40 gravity	4.00 – 4.25	4.00 – 4.25
CENTRAL MICHIGAN (a)		
P.W. Distillate	4.50 – 4.75	4.50 – 4.75
No. 3 gas oil, Str.	4.25 – 4.50	4.25 – 4.50
U.G.I. gas oil	3.75 – 4.25	3.75 – 4.25
Fuel Oils (Vis. at 100):		
500-700 Vis.	2.00 – 2.25	2.00 – 2.25
800-500 Vis.	2.25 – 2.50	2.25 – 2.50
100-300 Vis.	2.375– 2.875	2.375– 2.875
OKLAHOMA		
No. 1 prime white	3.625– 4.00	3.625– 4.00
No. 1 straw	3.50 – 3.75	3.50 – 3.75
No. 2 straw	3.375– 3.625	3.375– 3.625
No. 2 dark	(e) 3.375	(e) 3.375
U.G.I. gas oil	2.875– 3.375	2.875– 3.375
28-30 gravity fuel oil	(e) 3.25	(e) 3.25
28-30 gravity zero fuel	3.125– 3.50	3.125– 3.50
24-26 gravity fuel	(e) $0.85 -$0.90	(e) $0.925
14-16 gravity fuel	(e) $0.70	(e) $0.70
No. 6	(h) $0.30 -$0.45	
KANSAS (For Kans. destinations only).		
No. 1 p.w. fuel oil	3.75 – 4.125	3.75 – 4.125
10-14 gravity fuel oil	$0.45 -$0.80	$0.45 -$0.80
N. TEX. (b)		
No. 1 Prime white	(e) 4.00	(e) 4.00
N. LA. (For shipment to La. and Ark.)		
20-24 gravity fuel	(e) $1.00 -$1.05	(e) $1.00 -$1.05
16-20 gravity fuel	(e) $0.80 -$0.85	(e) $0.80 -$0.85
10-14 gravity fuel	(e) $0.70 -$0.75	(e) $0.70 -$0.75
CENTRAL WEST TEXAS (Prices to truck transports)		
38-42 gravity p.w. distillate	(f)	(f)
ARK. (F.o.b. Ark. plant of one refiner, for shipment to Ark. and La.)		
No. 2 fuel	3.625	3.625
28-30 gravity gas oil, zero	3.375	3.375
Tractor Fuel	(j) 4.25	(j) 4.25

Prices Effective	Jan. 23	Jan. 16
CALIFORNIA		
San Joaquin Valley:		
Heavy fuel	$0.55 -$0.75	$0.55 -$0.75
Light fuel	$0.65 -$0.85	$0.65 -$0.85
Diesel fuel (per gal.)	3.25 – 4.00	3.25 – 4.00
Stove dist. (per gal.)	3.50 – 5.00	3.50 – 5.00
Los Angeles:		
Heavy fuel	$0.50 -$0.90	$0.50 -$0.90
Light fuel	$0.60 -$1.00	$0.60 -$1.00
Diesel fuel (per gal.)	2.75 – 4.00	2.75 – 4.00
Stove dist. (per gal.)	3.00 – 5.00	3.00 – 5.00
San Francisco:		
Heavy fuel	$0.95	$0.95
Light fuel	$1.05	$1.05
Diesel fuel (per gal.)	4.50	4.50
Stove dist. (per gal.)	5.50	5.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Neutral Oils

WESTERN PENNA. (Refiners report no open spot market sales being made to jobbers and give following as their quotations only.)

Viscous Neutrals No. 3 col. (Viscosity at 70° F.)		
200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	17.50	17.50
10 p.t.	16.50	16.50
15 p.t.	16.00	16.00
25 p.t.	15.00	15.00
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	(k) 17.00	(k) 17.00
10 p.t.	(k) 16.00	(k) 16.00
15 p.t.	(k) 15.00	(k) 15.00
25 p.t.	13.00	13.00

SOUTH TEXAS

Vis. Color		
Pale Oils: (*Vis. at 100°F.*)		
100 No. 1½-2½	4.50 – 5.00	4.50 – 5.00
200 No. 2-3	6.00 – 6.25	6.00 – 6.25
300 No. 2-3	6.50 – 6.75	6.50 – 6.75
500 No. 2½-3½	7.50 – 7.75	7.50 – 7.75
750 No. 3-4	8.00 – 8.25	8.00 – 8.25
1200 No. 3-4	8.375– 8.75	8.375– 8.75
2000 No. 4	8.50 – 9.25	8.50 – 9.25
Red Oils:		
200 No. 5-6	6.00 – 6.25	6.00 – 6.25
300 No. 5-6	6.50 – 6.75	6.50 – 6.75
500 No. 5-6	7.50 – 7.75	7.50 – 7.75
750 No. 5-6	8.00 – 8.25	8.00 – 8.25
1200 No. 5-6	8.375– 8.75	8.375– 8.75
2000 No. 5-6	8.50 – 9.25	8.50 – 9.25

Note: Red oil prices cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Vis. at 100° F.) F.o.b. Tulsa basis).

Pale Oils: (0 to 10 P.P.)		
Vis. Color		
60-85—No. 2	5.50	5.50
86-110—No. 2	6.00	6.00
150—No. 3	9.00	9.00
180—No. 3	9.50 –10.00	9.50 –10.00
200—No. 3	10.00 –10.50	10.00 –10.50
250—No. 3	11.00 –11.50	11.00 –11.50
280—No. 3	12.50	12.50
300—No. 3	13.00	13.00
Red Oils:		
180—No. 5	(e) 9.00	(e) 9.00
200—No. 5	9.00 –10.00	9.00 –10.00
280—No. 5	11.50 –11.75	11.50 –11.75
300—No. 5	(e) 12.00	(e) 12.00

Note: The following oils, of 15 to 25 p.p., are generally quoted these amounts under 0-10 p.p.; viscous oils, 0.5c; non-viscous, 0.25c. Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

Pale Oils 0 to 10 p.p.:		
Vis. Color		
60-85—No. 2	7.25	7.25
86-110—No. 2	7.75	7.75
150—No. 3	9.00	9.00
180—No. 3	10.00	10.00
200—No. 3	10.50	10.50
250—No. 3	11.50	11.50

Prices Effective	Jan. 23	Jan. 16
CHICAGO (Continued)		
Red Oils:		
180—No. 5	9.00	9.00
200—No. 5	9.50	9.50
250—No. 5	10.50	10.50
280—No. 5	11.50	11.50
300—No. 5	11.75	11.75

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower. To obtain delivered prices in Chicago, add 0.25c per gal.

Cylinder Stocks

MID-CONTINENT (F.o.b. Tulsa basis)

Bright Stocks:		
190-200 Vis. at 210 °D.	(e) 19.00	(e) 19.00
150-160 Vis. at 210°D:		
0 to 10 p.p.	14.25 –16.00	14.25 –16.00
10 to 25 p.p.	13.50 –15.50	13.50 –15.50
25 to 40 p.p.	13.50 –15.00	13.50 –15.00
150-160 vis. at 210° E.	12.50 –15.00	12.50 –15.00
120 Vis. at 210° D		
0 to 10 p.p.	14.50 –15.125	14.50 –15.125
25 to 40 p.p.	(e) 14.25	(e) 14.25
600 S.R. Dark Green	(f)	(f)
600 S.R. Olive Green	6.50 – 7.50	6.50 – 7.50
631 S.R.	(e) 12.50	(e) 12.50
Black Oil	3.50 – 4.00	3.50 – 4.00

CHICAGO (Viscosity at 210°)

Unfiltered Steam Refined:		
140	9.00	9.00
160	10.00	10.00
200	11.00	11.00
Bright stocks, 160 vis. at 210. No. 8 color:		
0 to 10 p.p.	15.75	15.75
15 to 25 p.p.	14.75	14.75
30 to 40 p.p.	14.25	14.25
E filtered Cyl. Stock	13.50	13.50

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

WESTERN PENNA. (Refiners report no open spot market sales being made to jobbers and give following as their quotations only.)

600 S.R. filterable	8.00	8.00
650 S.R.	9.00	9.00
600 fl.	10.50	10.50
630 fl.	(h) 13.00	(h) 13.00
Bright stock, 145-155 vis. at 210°. 540-5 0 flash. No 8 color:		
10 p.t.	17.00 – 18.00	17.00
15 p.t.	16.00 – 17.00	16.00
25 p.t.	14.00 – 15.00	14.00

Petrolatums

WESTERN PENNA. (In bbls., carloads; in tank cars, 0.5c per lb. less. One refiner reports he equalizes freight with nearest refinery to destination)

Snow White	5.875– 6.125	5.875– 6.125
Lily White	4.875– 5.125	4.875– 5.125
Cream White	3.875– 4.125	3.875– 4.125
Light Amber	2.50	2.50
Amber	2.25	2.25
Red	(e) 2.125	(e) 2.125

Wax

WESTERN PENNA. (Refiners report no open spot market sales being made to jobbers and give following as their quotations only. In bbls., carloads, New York)

122-124 A.m.p., w.c. scale	(k) 2.45	(k) 2.35 -2.40
124-126 A.m.p., w.c. scale	2.45 – 2.50	2.35 – 2.40

OKLAHOMA (In bbls. or burlap bags, carloads)

124-126 A.m.p., w.c. scale	2.50	2.40 – 2.50

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:		
122-124	4.00	4.00
125-127	(i) 4.10	(i) 4.10
127-129	(i) 4.45	(i) 4.45
130-132	(i) 4.75	(i) 4.75
132-134	(i) 5.00	(i) 5.00
135-137	(i) 5.75	(i) 5.75

(a) Prices f.o.b. Central Michigan refinery group basis, for shipment within Mich. Shipments may originate at plants outside Central group. (b) For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments. (c) Excluding Detroit shipment. (d) Nominal. (e) One refiner quoting. (f) No price reported. (g) To resellers holding licenses. (h) Two refiners quoting. (i) Same prices quoted in bags or slabs loose. (j) For shipment to Ark. points only. (k) Two suppliers quoting.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline do not include taxes; they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Discounts to various classes of buyers also are shown in footnotes. These prices in effect Jan. 23, 1939, as posted by principal marketing companies at their headquarters offices, but subject to later correction.

S. O. New Jersey

Essolene
(Regular Grade)

	Consumer Tank Car	Dealer T.W.	Gaso-line Taxes	Kero-sine T.W.
*Atlantic City, N. J.	6.9	8.7	4	8
*Newark, N. J.	6.9	8.7	4	8
Annapolis, Md.	7.85	9.35	5	9.5
Baltimore, Md.	7.25	8.75	5	8.5
Cumberland, Md.	8.65	11.15	5	10
Washington, D. C.	7.5	9	3	9.5
Danville, Va.	8.45	10.95	6	12.9
Norfolk, Va.	7.25	9.75	6	11.5
Petersburg, Va.	7.55	10.05	6	11.7
Richmond, Va.	7.55	10.05	6	11.7
Roanoke, Va.	8.75	11.25	6	11
Charleston, W. Va.	8.05	10.55	6	12.6
Parkersburg, W. Va.	7.35	9.35	6	11.2
Wheeling, W. Va.	8.35	10.25	6	12.2
Charlotte, N. C.	8.65	11.15	7	12.1
Hickory, N. C.	9.15	11.65	7	12.5
Mt. Airy, N. C.	8.95	11.45	7	12.3
Raleigh, N. C.	8.25	10.75	7	11.6
Salisbury, N. C.	8.75	11.25	7	12.2
Charleston, S. C.	7.25	9.75	7	10.6
Columbia, S. C.	8.25	10.25	7	11.6
Spartanburg, S. C.	8.95	11.45	7	12.4

Discount to undivided dealers, thru territory, except New Jersey points, which see in "Note" below: Dealer t.w. price less 0.5c per gal.

*Effective Dec. 1, 1938, S. O. New Jersey posted a minimum retail resale price of 11.2c thru New Jersey, except Trenton area and Cumberland county.

Note: While the above posted prices continue at Atlantic City and Newark, N. J., dealers will pay a net price of 8.2c per gal. for Essolene. Dealers having pumps marked only Esso, Essolene and "Standard" White gasoline will pay 7.7c per gal. for Essolene.

Price basis to commercial consumers on motor fuels, in tank wagon delivery: To contract accounts, purchasing at least one full compartment at a time by hose connection: Effective March 12, 1937, in New Jersey, and March 8 in Maryland, District of Columbia, and in Arlington and Fairfax Counties in Virginia, on yearly purchases: from 2,500 to 100,000 gals., consumer t.w. price at time and place of delivery; 100,000 gals. per year consumer tank car price, plus 0.5c per gal. Generally consumer t.w. price in foregoing states is equivalent of dealer t.w. price, less 0.5c per gal.

Effective May 15, 1937, on Essolene and Esso (by tank wagon) in West Virginia and Virginia (except Arlington and Fairfax Counties, which see above), commercial consumers taking deliveries of 50 gals. (West Va. 100 gals.) or more at one time will be billed at the posted consumer t.w. price. Deliveries less than 50 gals. (West Va. 100 gals.) will be billed at 4c per gal over posted consumer t.w. price. Generally, posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Effective Dec. 19, 1938, in North Carolina, on single deliveries, prices figured over posted consumer tank car price: 50 to 149 gals. inclusive, 1c over; 150 gals. and over, 0.5c; less than 50 gals., 6c over t.c.

Effective Dec. 16, 1938, in South Carolina, on single deliveries, prices figured over posted consumer tank car price: 25 to 149 gals., 1c over; 150 gals. and over, 0.5c; less than 25 gals. at one time, 6c over t.c.

Kerosine Discount: 1c off t.w. price for 25 gals., or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)
Socony Mobilgas
(Regular Grade)

	Consumer Tank Car	"Split" Dealer T.W.	Gaso-line Taxes	Kero-sine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	6.75	8.4	*5	8
Borough of Richmond (Staten Is.)	6.75	8.4	*5	8
Albany, N. Y.	6.75	8.8	5	8
Binghamton, N. Y.	8	9.5	5	8.50
Buffalo, N. Y.	7	7.5	5	7.5
Jamestown, N. Y.	7.1	8.4	5	7.5
Plattsburg, N. Y.	7.3	9.3	5	9
Rochester, N. Y.	7.7	8.5	5	7.5
Syracuse, N. Y.	7.4	8.5	5	8.5
Danbury, Conn.	7.1	9.1	4	8
Hartford, Conn.	6.9	8.9	4	6.5
New Haven, Conn.	6.8	8.3	4	6
Bangor, Me.	7.25	9.5	5	8
Portland, Me.	6.75	9	5	7.5
Boston, Mass.	6.5	8.5	4	7
Concord, N. H.	7.6	9.7	5	8.25
Lancaster, N. H.	8.5	11.2	5	9.5
Manchester, N. H.	7.3	9.5	5	8
Providence, R. I.	6.5	8.5	4	7
Burlington, Vt.	7.3	9.7	5	9
Rutland, Vt.	7.5	10	5	8

*Plus 2% city sales tax computed at time of each sale.

Discount to undivided dealers: 0.5c less than "split" dealer t.w.

Price basis to commercial consumers: Effective about Nov. 15, 1936 in New York and New England for tank wagon delivery: monthly purchases of 25,000 gals. or over, pay consumer tank car price at point of delivery, plus 0.5c gal.; monthly purchases of 5,000 to 25,000 gals., pay undivided dealer tank wagon price at point of delivery; monthly purchases of less than 5,000 gals., pay divided dealer tank wagon price at point of delivery. Private consumers pay undivided dealer tank wagon price at point of delivery, plus 2c gal.

Socony-Vacuum Oil Co., Cont'd

Atlantic Refining

Atlantic White Flash Gasoline
(Regular Grade)

	Commercial Tank Car	Dealer T.W.	Gaso-line Taxes	Kero-sine T.W.
Philadelphia, Pa.	7	8	5	10
Pittsburgh	8	9.5	5	10.5
Allentown	7.5	9	5	10.5
Erie	8	8.5	5	10
Scranton	6.9	7.4	5	10.5
Altoona	8	10	5	10.5
Harrisburg	7	8.5	5	10.5
Williamsport	7.5	9	5	10.5
Dover, Del.	...	7.5	5	10.5
Wilmington	...	8	5	9.75
Boston, Mass.	...	8	4	7.5
Springfield, Mass.	...	9	4	7.5
Worcester, Mass.	...	9	4	7.5
Fall River, Mass.	...	8.5	4	8
Hartford, Conn.	...	8.9	4	7
New Haven, Conn.	...	8.3	4	7
Providence, R. I.	...	8.5	4	7
Atlantic City, N. J.	...	8.2	4	8
Camden, N. J.	...	7.6	4	8
Trenton, N. J.	...	8.2	4	8
Annapolis, Md.	...	9.35	5	9.5
Baltimore, Md.	...	8.75	5	8.5
Hagerstown, Md.	...	9.85	5	10
Richmond, Va.	...	10.05	6	11.7
Wilmington, N. C.	...	9.85	7	10.8
Brunswick, Ga.	...	9	7	*10.5
Jacksonville, Fla.	...	8	8	10

*Georgia has kerosine tax of 1c per gal., not included in above price.

Discount to undivided dealers: Dealer t.w. less 0.5c per gal. except in Georgia and Florida, dealer t.w. and undivided dealer price is same.

Price basis to commercial consumers: consumers under contract, in Penna. and Delaware, effective Mar. 11, 1937, on yearly gasoline purchases taking full compartment hose deliveries, using 100,000 gals. or more per year, tank car price plus 0.5c per gal.; consumers taking less than 100,000 gals., undivided dealer price. Consumers under contract and not under contract, taking less than full compartment delivery, and consumers not under contract taking full compartment delivery, get divided dealer price. Consumers taking less than 25 gals., t.w. delivery, get 4c above undivided dealer price.

Discount on kerosine: Effective Oct. 29, 1936, in Pennsylvania and Delaware, 2c per gal. off t.w. price on t.w. deliveries of 25 gals. or more at one time.

S. O. Ohio

Sohio X-70 Gasoline
(Regular Grade)

	Consumer T.W.	†Divided Dlr.	Gaso-line Taxes	Kero-sine T.W.
Ohio Statewide	11	10	5	*12
Counties where some prices are below statewide:				
Ashland, Butler, Columbiana, Pickaway, Preble, Warren and Wayne:	10.5	9.5	5	....
Clark, Clinton, Defiance, Fairfield, Franklin, Fulton, Greene, Montgomery, Paulding, Stark, Tuscarawas, Washington, and Williams:	10	9	5	....
Hamilton	11	9	5	....
Knox	10.5	9	5	....
Lucas	9	8	5	....

S. O. Ohio Cont'd

Renown Gasoline
(Third Grade)

Ohio Statewide	10.5	9.5	5	....
Counties where some prices are off statewide:				
Ashland, Clark, Columbiana, Greene, Montgomery, Pickaway, Washington and Wayne:	10	9	5	....
Clermont, Darke, and Miami:	11	9.5	5	....
Clinton, Defiance, Fairfield, Franklin, Fulton, Paulding, Stark, Tuscarawas and Williams:	9.5	8.5	5	....
Hamilton	11	9	5	....
Knox	10	8.5	5	....
Lucas	8.5	7.5	5	....

Kerosine Prices
(Off Statewide Level)

Kerosine prices are off statewide level in the following counties:

Allen, Auglaize, Champaign, Columbiana, Darke, Geauga, Greene, Hardin, Logan, Mahoning, Mercer, Preble, Putnam, Shelby, Trumbull and Van Wert *11.5
Paulding *11
Ashtabula *10.5
Fayette, Madison, Pickaway, Portage and Summit *8.5

†This price also to authorized agents, exclusive of 0.5c rental. Discount to undivided dealers: 0.5c less than divided dealer t.w.

*Ohio has kerosine tax of 1c per gal., not included in above prices.

Commercial Tank Wagon O.D.A. to contract accounts: Effective Oct. 20, 1937, thru Ohio except in counties listed below, on monthly purchases, off posted consumer t.w. price: 0 to 999 gals., 0.5c; 1,000 to 19,999 gals., 1.5c; 20,000 gals. and over, 2.5c. The counties where O.D.A. differs from statewide are: Allen, Ashtabula, Auglaize, Butler, Champaign, Clinton, Columbiana, Cuyahoga, Darke, Defiance, Erie, Fulton, Geauga, Hamilton, Hancock, Hardin, Henry, Highland, Lake, Logan, Lorain, Lucas, Mahoning, Mercer, Ottawa, Paulding, Putnam, Sandusky, Scioto, Shelby, Trumbull, Van Wert, Warren, Williams and Wood.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices," S. O. Ohio says.

On kerosine, prices to resellers and commercial consumers are posted generally at 3c per gal. below consumer t.w. price in any quantity, when such prices are on statewide level.

S. O. Kentucky

Crown Gasoline
(Regular Grade)

	Consumer T.W.	Net Dlr.	Gaso-line Taxes	Kero-sine T.W.
Covington, Ky.	11.5	8.5	6	9.5
Lexington, Ky.	13	10	6	10
Louisville, Ky.	11.5	8.5	6	9
Paducah, Ky.	12.5	9.5	6	9
Jackson, Miss.	10.5	7.5	7	*9
Vicksburg, Miss.	12	9	7	*8.5
Birmingham, Ala.	13	10	*8	8.5
Mobile, Ala.	12	9	*9	8.5
Montgomery, Ala.	12	10	*9	*9.5
Atlanta, Ga.	13.5	10.5	7	*7.5
Augusta, Ga.	12.5	9.5	7	*9
Macon, Ga.	11	8	7	*10
Savannah, Ga.	12	9	7	*7
Jacksonville, Fla.	12	9	8	8
Miami, Fla.	12	9	8	8
Pensacola, Fla.	12	9	*9	8
Tampa, Fla.	11	8	8	8

Kyso Gasoline
(Third Grade)

Covington, Ky.	10	7.5	6	....
Lexington, Ky.	11.5	9	6	....
Louisville, Ky.	10	7.5	6	....
Paducah, Ky.	10.5	8	6	....
Jackson, Miss.	8.5	6	7	....
Vicksburg, Miss.	10	7.5	7	....
Birmingham, Ala.	11	8.5	*8	....
Mobile, Ala.	10	7.5	*9	....
Montgomery, Ala.	11	8.5	*9	....
Atlanta, Ga.	11	8.5	7	....
Augusta, Ga.	11	8.5	7	....
Macon, Ga.	8.5	6	7	....
Savannah, Ga.	9.5	7	7	....
Jacksonville, Fla.	10.5	8	8	....
Pensacola, Fla.	10	7.5	*9	....
Tampa, Fla.	9.5	7	8	....

Discounts to all tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below, regardless of quantity purchased, per month

Above prices include these inspection fees on both gasoline and kerosine unless otherwise specified, per gallon, figured on basis of 50 gallons per barrel:
Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/5c per gal. in lots up to 25 bbls.; 2/25c per gal. in lots of 25 bbls. or more; Kansas, 1/50c. (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal. lots of more than 50 in bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee, 2/5c; and Wisconsin, 3/100c.
Kerosine inspection fee only: Iowa, 3/50c; Michigan, 1/5c per gal.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline do not include taxes; they do, however, include inspection fees as shown in general footnote. Gasoline taxes shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Discounts to various classes of buyers also are shown in footnotes. These prices in effect Jan. 23, 1939 as posted by principal marketing companies at their headquarters offices, but subject to later correction.

**Taxes*: In the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city; Montgomery 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have kerosine taxes of 1c per gal., and Mississippi 0.5c, not included in above prices.

S. O. Indiana

Red Crown (*Regular Grade*)
Stanolind (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Prices Red Crown	Stano-lind	Gaso-line Taxes	Kero-sine T.W.
Chicago, Ill.	11.1	8.1	6.4	4	10
Decatur, Ill.	11.1	8.6	8	4	10
Joliet, Ill.	11.1	8.6	8.4	4	10
Peoria, Ill.	11.1	9.1	8.5	4	10
Quincy, Ill.	10.9	8.9	6.7	4	8.7
Indianapolis, Ind.	11.8	10.3	8.9	5	*9.5
Evansville, Ind.	11.6	10.1	9.1	5	*10.5
South Bend, Ind.	12.1	10.6	9.2	5	*9
Detroit, Mich.	9.1	7.6	7.1	4	9
Grand Rapids, Mich.	10.8	9.5	8	4	9.7
Saginaw, Mich.	11.8	10.3	8.8	4	9.3
Green Bay, Wis.	11.9	10	9	5	10.3
Milwaukee, Wis.	11.3	8.8	8.3	5	10.2
La Crosse, Wis.	11.5	10	9.5	5	10.4
Minneapolis-St. Paul	11	9.5	8.5	5	10.4
Duluth, Minn.	11.9	10.4	8.9	5	10.8
Mankato, Minn.	11.5	10	9.5	5	8.9
Des Moines, Ia.	10.9	9.4	7.5	4	*9.8
Davenport, Ia.	11.1	9.6	9.1	4	*10
Mason City, Ia.	11.3	9.8	9.3	4	*10.2
St. Louis, Mo.	10.2	8.7	7.5	*4	8
Kansas City, Mo.	10.4	7.9	6.4	*4	7.5
St. Joseph, Mo.	10.4	7.2	6	*4	9.3
Fargo, N. D.	12.7	11.2	10.7	4	11.6
Minot, N. D.	14	12.5	12	4	12.9
Huron, S. D.	12	10.5	10	5	10.9
Wichita, Kans.	9.9	6.6	5.5	4	7.3

***Taxes: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax. Kerosine taxes. Indiana has 4c, Iowa 3c per gal. state tax, not included in above prices.**

***Discount to commercial consumers*: Effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. prices: all gasolines, 25 to 1,000 gals., at t.w. price; 1,000 gals., or more, 1.5c off t.w. on Ethyl and Red Crown, and 1c on Stanolind (latter effective June 9, 1937). Minimum delivery is 25 gals.**

S. O. Nebraska

Standard Red Crown Gasoline (*Regular Grade*)

	T.W. Dealer	Gaso-line Taxes	Kero-sine T.W.
Omaha, Neb.	11.5 10	6	10.3
McCook	11.5 9.5	6	10
Norfolk	11.9 8.9	6	10.7
North Platte	12.3 9 4	6	11
Scottsbluff	11 8.9	6	11.2

***Discounts to commercial consumers*: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.**

S. O. Louisiana

Essolene (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gaso-line Taxes	Kero-sine T.W.
Little Rock, Ark.	7.25	9.75	7.5	11
Alexandria, La.	6.75	9.25	8	*11.5
Baton Rouge, La.	6.75	9.25	8	* 9.5
New Orleans, La.	6.75	9.25	*10	* 9
Lake Charles, La.	6.75	9.25	8	*11.5
Shreveport, La.	5.5	8	8	*10
Lafayette, La.	7	9 5	8	*11 5
Bristol, Tenn.	10.25	9	8	14 5
Chattanooga, Tenn.	9.5	12	8	14
Knoxville, Tenn.	10	12 5	8	14 5
Memphis, Tenn.	8	10 5	8	12 5
Nashville, Tenn.	9	9.5	8	12

***Taxes: New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana has kerosine tax of 1c per gal.; in addition New Orleans has 1c parish tax, none of which are included in above prices.**

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Price basis to commercial consumers: Effective May 15, 1937, thru territory except New Orleans: commercial consumers taking 50 gals. or more at one time will be billed at posted consumer t.w. price; those taking less than 50 gals. at one time will be billed at 4c per gal. over posted consumer t.w. price. Generally, the posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal. In New Orleans, effective Dec. 12, 1938: On these single deliveries: less than 50 gals., consumer t.c. price plus 2c per gal.; 50 to 199 gals., consumer t.c. plus 1c; and 200 gals. and over, consumer t.c. plus 0.5c per gal.

Humble Oil & Refining Co.

Humble Motor Fuel (*Regular Grade*)

	*T.W.	S.S.	Gaso-line Taxes	Kero-sine T.W.
Dallas, Tex.	6	10	5	8
Ft. Worth, Tex.	7	12	5	7
Houston, Tex.	9.5	13.5	5	8
San Antonio, Tex.	9	13	5	8

U. S. Motor Gasoline (*Third Grade*)

Dallas, Tex.	5.5	8	5
Ft. Worth, Texas	6	9	5
Houston, Tex.	6	....	5
San Antonio, Tex.	6	....	5

Thriftane (Leaded, 67 Octane, Purple Gasoline)

Houston	8.5	11.5	5
San Antonio	8	11	5

**Price is t.w. price to all classes of dealers and consumers.*

Continental Oil

Conoco Bronze (*Regular Grade*)
Demand (*Third Grade*)

	—Dealer Prices— Conoco Bronz-e-z	De-mand	Gaso-line Taxes	Kero-sine ‡T.W.
Denver, Colo.	10.5	9.5	5	11.5
Grand Junc., Colo.	11	10	5	15
Pueblo, Colo.	9.5	7.5	5	10.5
Casper, Wyo.	12	11	5	11.5
Cheyenne, Wyo.	10	9	5	13
Billings, Mont.	12	10	6	13
Butte, Mont.	13.5	10.5	6	15.5
Great Falls, Mont.	12	10	6	15.5
Helena, Mont.	14	13	6	15.5
Salt Lake City, Utah	11	10	5	16
Boise, Ida.	13	10.5	6	18
Twin Falls, Ida.	13.5	12.5	6	18
Albuquerque, N. M.	9.5	8.5	†6.5	10
Roswell, N. M.	8	6.5	†6.5	10.5
Santa Fe, N. M.	9.5	8.5	*7	12
Muskogee, Okla.	8.5	6	5	7
Oklahoma City, Okla.	6.5	5	5	6
Tulsa, Okla.	5	4	5	6
Ft. Smith, Ark.	8.25	5.75	5	7.5
Little Rock, Ark.	9.25	7.625	7.5	9
Texarkana, Ark.	7	6	5	8

†Includes city tax of 0.5c
*Includes 1c city tax
‡Prices are in t.w. deliveries to consumers and dealers.

S. O. California

Standard Gasoline (*Regular Grade*)

	T.W.	S.S.	Gaso-line Taxes	Kero-sine T.W.
San Francisco, Cal.	13.5	14.5	4	11.5
Los Angeles, Cal.	13	14	4	10
Fresno, Cal.	14.5	15.5	4	12.5
Phoenix, Ariz.	15.5	16.5	6	*12.5
Reno, Nev.	15.5	16.5	5	13.5
Portland, Ore.	14	15	6	13.5
Seattle, Wash.	14	15	6	13.5
Spokane, Wash.	17	18	6	16.5
Tacoma, Wash.	14	15	6	13.5

Flight Gasoline (*Third Grade*)

San Francisco, Cal.	12	13	4	....
Los Angeles, Cal.	11.5	12.5	4	....
Fresno, Cal.	13	14	4	....
Reno, Nev.	14	15	5	....
Phoenix, Ariz.	14	15	6	....
Portland, Ore.	12.5	13.5	6	....
Seattle, Wash.	12.5	13.5	6	....
Spokane, Wash.	15.5	16.5	6	....
Tacoma, Wash.	12.5	13.5	6	....

**Arizona has kerosine tax of 5c per gal., not included in above prices.*

Discount to dealers, thru territory: on gasoline, off t.w. price on Standard Ethyl and Standard Gasoline, to 100% dealers, 3c; to split dealers in California only; 2c; on Flight gasoline, 100% dealers, 2c; and split dealers in California only; 2c.

On Stanavo Aviation Gasoline, to all classes of dealers, 3c off t.w.

To commercial consumers: off tank wagon price: on single deliveries of 40 gallons and over. Stanavo Aviation, Standard Ethyl and Standard Gasolines, 3c. Flight Gasoline, 2c per gallon. Tank wagon delivery, less than 40 gals., 1c per gal. above posted t.w. price. Discounts on kerosine: in tank cars, 3c off tank truck price; plant deliveries to jobbers, 2.5c below tank truck price.

Canada

PRICES OF IMPERIAL OIL LTD.
Per Imperial Gallon, which is 1.2 U. S. Gallons

	3-Star Imperial Gasoline (*Regular Grade*) T.W.	Gasoline Taxes	Kero-sine T.W.
Hamilton, Ont.	15	6	15.5
Toronto, Ont.	15	6	15.5
Brandon, Man.	21 1	7	22.3
Winnipeg, Man.	20 5	7	20 7
Regina, Sask.	19	7	21
Saskatoon, Sask.	21 3	7	23.3
Edmonton, Alta.	19 5	7	21 5
Calgary, Alta.	16 5	7	18.5
Vancouver, B. C.	16	7	23
Montreal, Que.	14	8	14.5
St. John, N. B.	13 5	10	17.5
Halifax, N. S.	13 5	10	17.5

Discounts to undivided dealers, 1c off t.w. price, except Maritime Provinces where undivided dealers pay t.w. price. Divided dealers pay t.w. price, thru territory.

Aviation Gasoline

Following are tank car, tank wagon or dealer prices, as indicated, of aviation gasoline in several marketing territories.

S. O. OHIO
Thru Ohio
Esso Aviation

	Consumer T.W.	Gasoline Taxes
74 octane	15.5	5
80 octane	16.5	5
87 octane	17.5	5

***Discounts*: For delivery on contract to hangar operators and resellers: 2c below consumer posted t.w. price, shown above.**

S. O. INDIANA
Stanavo Ethyl Aviation Gasoline
73 Octane Number

Chicago, Ill.	14.9 4
Detroit, Mich.	16.5 4
Milwaukee, Wis.	15.1 5
Minneapolis, Minn.	15.3 5
St. Louis, Mo.	14.5 3
Kansas City, Mo.	14.2 *4
Fargo, N. D.	16.5 4
Huron, S. D.	15.8 5

***Includes 1c city tax.**

HUMBLE OIL & REFINING CO.
Aviation Gasoline

	Tank Car
Baytown, Tex.	8.5

CONTINENTAL OIL CO.
Conoco Special Gasoline

	Dealer Price	Gasoline Taxes
Denver, Colo.	14 5	5
Cheyenne, Wyo.	15	5
Helena, Mont.	16	6
Salt Lake City, Utah	17.5	5
Albuquerque, N. M.	14	*6 5

***Includes city tax of 0.5c.**

S. O. CALIFORNIA
Stanavo Aviation Gasoline

	T.W.	
Phoenix, Ariz.	17.5	6
Los Angeles, Cal.	15	4
San Francisco, Cal.	15.5	4
Reno, Nev.	17.5	5
Portland, Ore.	16	6
Seattle, Wash.	16	6
Spokane, Wash.	19	6

***Note*: For discounts, etc., see note under Standard and Flight gasoline above.**

Naphtha (In Tank Wagon)

S. O. NEW JERSEY

	Posted Tank Wagon Prices Mineral Spirits	V.M.&P.
Newark, N. J.	11.5	15.5
Baltimore, Md.	15.5	....
Washington, D. C.	15	....

Discounts: Buyers taking following quantities, at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y.	10.5	12
*New York City	9.5	10.5
Rochester, N. Y.	12	12
Syracuse, N. Y.	12	14.5
Boston, Mass.	11	11
Bridgeport, Conn.	11	11.5
Hartford, Conn.	10.5	11
Providence, R. I.	11	12

***Prices apply to consumers only in quantities over 1,000 gals. annually. For quantities under 1,000 gals. annually, add 0.5c per gal.**

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include the federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Discounts to various classes of buyers also are shown in footnotes. These prices in effect Jan. 23, 1939, as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

ATLANTIC REFINING CO.

Philadelphia, Pa.	11.5	12.5
Lancaster, Pa.	13	14
Pittsburgh, Pa.	12.5	14.5

Note: Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	12.5	13.5

Note: V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers, off t.w. price: 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c; 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.

S. O. INDIANA

(Prices include state and federal taxes)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill.	16.2	16.5	15.9
Detroit, Mich.	19.2	18.2	19.7
Kansas City, Mo.	13.9	14.9	14.4
St. Louis, Mo.	14.2	15.2	12.9
Milwaukee, Wis.	18.8	19.8	19.3
Minneapolis, Minn.	19	20	17.7

Note: All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	10.5	9.5
New York Harbor	10	9
Philadelphia district	10.5	9
Boston	10.5	9.5
Providence	10.5	9.5
Ohio points, delivered	8.875	*8

*This is on rubber solvent.

Note: In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.5c less than on V.M.&P.

Price Changes

Dates and amounts of changes. See table for full current prices.

Socony-Vacuum Oil—Mobilgas:

Bangor split dealer t. w. up 1c, Jan. 4.

Kerosine:

Jamestown t. w. cut 0.75c, Jan. 17.
Rochester t. w. cut 1c, Jan. 19.
Boston t. w. cut 0.5c, Dec. 16.

S. O. Ohio—X-70 and Renown:

Cut 0.5c, thru Defiance County, Jan. 21.

Atlantic Refining—Atlantic White Flash:

Erie dealer t. w. cut 0.5c, Jan. 17.

S. O. Kentucky—Crown and Kyso:

Tampa cut 1c, Dec. 31.

S. O. Nebraska—Red Crown:

Scottsbluff dealer price up 1c, Jan. 19.

Kerosine:

Scottsbluff t. w. cut 0.6c, Jan. 12.

S. O. Louisiana—Essolene:

Bristol dealer t. w. cut 2c, Jan. 14.
New Orleans commercial consumer price basis revised, Dec. 12; see footnote under S. O. La. in table.
Nashville dealer t. w. cut 2c, Jan. 14.

Humble Oil & Refining—U. S. Motor Gasoline:

Discontinued at company-operated service stations at Houston and San Antonio, Jan. 16. New gasoline, Thriftane, leaded, 67 octane, purple color, sold at these two points, at prices shown in table, Jan. 16.

Continental Oil—Conoco Bronz-z-z:

Tulsa dealer price cut 1c, Jan. 12.
Correction: Dealer price should have been shown at 9.5c at Santa Fe, instead of 8.5c shown on page 108 of Jan. 18 issue.

TANK WAGON MARKETS, HEATING OILS

Prices in Effect Jan. 23, 1939

Following are posted tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

S. O. NEW JERSEY

	No. 1	No. 2	No. 4
Atlantic City, N. J.	8.0	6.25	6.25
Newark	8.0	6.25	6.25
Annapolis, Md.	....	6.5	....
Baltimore	7.5	6.5	6.0
Washington, D. C.	7.25	6.75	6.75
Norfolk, Va.	7.0	6.0	6.0
Petersburg	7.25	6.25	....
Richmond	7.25	6.25	6.25
Charlotte, N. C.	8.75	7.75	....
Hickory	....	8.25	....
Raleigh	8.75	7.25	....
Charleston, S. C.	8.5	7.0	....
Columbia	9.5	8.0	....
Spartanburg	10.2	8.7	....

SOCONY-VACUUM OIL CO. INC.
(S. O. New York Division)

	No. 2	No. 3	No. 4
New York City	6.50	6.50	6.50
Albany, N. Y.	6.50	6.50	6.50
Rochester, N. Y.	7.50	7.50	7.50
Boston, Mass.	6.00	6.00	6.00
Bangor, Me.	6.75	6.75	6.75
Manchester, N. H.	6.50	6.50	6.50
Burlington, Vt.	7.5	7.5	7.5
Hartford, Conn.	6.00	6.00	6.00
New Haven, Conn.	6.00	6.00	6.00
Providence, R. I.	6.00	6.00	6.00

Note: Prices for No. 1 fuel in Socony-Vacuum territory same as for kerosine which see in tank wagon table for various cities; prices change with kerosine.

	No. 1	No. 2	No. 3	No. 4
ATLANTIC REFINING Cont'd				
Philadelphia, Pa.	7.75	6.00	6.00	6.00
Allentown, Pa.	8.50	6.50	6.50	6.50
Wilmington, Del.	7.75	6.00	6.00	6.00
Springfield, Mass.	7.5	6	--	6
Worcester, Mass.	7.5	6.00	....	6.00
Hartford, Conn.	7.00	6.00	--	6.00
S. O. OHIO				
Columbus Division and Cleveland	7.50	7.50	7.00	....
City of Lima	8.00	8.00	7.00	....
Rest of Ohio	8.00	8.00	7.50	....

Note: S. O. Ohio prices are for full compartment hose dumps, bucket dumps are 0.5c per gallon higher.

S. O. INDIANA
Stanolex Fuel and Furnace Oils

	No. 1 Fuel	Stanolex Furnace
Chicago	(a)6.5	6.5
Indianapolis	...	(b)7.8
Detroit	...	7.1
Milwaukee	8.4	7.7
Minneapolis	7.8	7.8
St. Louis	7.7	(c)6.7
Kansas City	6.8	6.8

(a) For 400 gals. and over; 150 to 399 gals., 7c; 1 to 149 gals., 8c.
(b) Excluding 4c state tax.
(c) For 400 gals & over; 100 to 399 gals., 7c; 1 to 99 gals., 8c.
Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations.

New Tanker's Capacity Is 103,514 Barrels

N. P. N. News Bureau

LOS ANGELES, Jan. 14. — Newest addition to the fleet of modern American tankers is the S.S. "L. P. ST. CLAIR", recently launched at the Sparrow Point yard of Bethlehem Steel Co. Named after the chairman of the board of Union Oil Co., this tankship will be used in regular service out of Pacific Coast ports.

The boat has a deadweight of about 13,000 tons and tank capacity of 103,514 barrels, or 4,347,500 gallons of oil. Cargo tank space is divided into 24 compartments. Pumping capacity permits loading or unloading the vessel in less than 12 hours.

With an over all length of 463 feet, draft of 28 feet six inches, and speed of 13 knots, the ship is propelled by a single screw installation of steam turbines, developing 3500 shaft horsepower. Steam is supplied by two water tube oil burning boilers.

Among the modern safety devices included in this ship are independent radio receivers, an automatic S.O.S. receiver, radio direction finder, and complete radio communication equipment, one set of which has a range of about 2000 miles. Automatic alarms indicate failure of running lights, of oil supply and similar disturbances. An inert gas system, developed by Union Oil engineers, is used as protection for the cargo tanks.

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline-Kerosine Cents per Cwt.	Gasoline-Kerosine Cents per gal. 6.6 lbs.	Distillate-Gas Oil-Fuel Oil Cents per Cwt.	Distillate-Gas Oil-Fuel Oil Cents per gal. 7.4 lbs.
Chicago, Ill.	40	2.640	32	2.368
Decatur, Ill.	39	2.574	31	2.294
Joliet, Ill.	40	2.640	32	2.368
Peoria, Ill.	39	2.574	31	2.294
Quincy, Ill.	36	2.376	29	2.146
Indianapolis, Ind.	48	3.168	39	2.886
Evansville, Ind.	46	3.036	37	2.738
South Bend, Ind.	53	3.498	42	3.108
Detroit, Mich.	64	4.224	51	3.774
Gd. Rapids, Mich.	62	4.092	50	3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	51	3.366	41	3.034
Milwaukee, Wis.	43	2.838	34.5	2.553
LaCrosse, Wis.	46	3.036	37	2.738
Min'ap'ls-St. Paul	46	3.036	37	2.738
Duluth, Minn.	52	3.432	41.5	3.071
Mankato, Minn.	46	3.036	37	2.738
Des Moines, Ia.	36	2.376	29	2.146
Davenport, Ia.	39	2.574	31	2.294
Mason City, Ia.	42	2.772	33.5	2.479
St. Louis, Mo.	33	2.178	26.5	1.961
Kansas City, Mo.	28	1.848	22.5	1.665
St. Joseph, Mo.	28	1.848	22.5	1.665
Fargo, N. D.	63	4.158	50.5	3.737
Minot, N. D.	83	5.478	66.5	4.921
Huron, S. D.	53	3.498	42.5	3.145
From Ponca City	13	0.858*	13	0.858†
Wichita				
From Tulsa	21	1.386*	21	1.386†
From Cushing	19	1.254*	19	1.254†

*This rate also includes distillate rate at 6.6 lbs. per gal.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

Prices Effective	Jan. 23	
District:	(a)60-64 Oct.	(a) 65 Oct. & Above
N. Y. harbor	6.00 – 6.25	6.00 – 6.50
(b)N. Y. harbor	5.75 – 6.00	5.75 – 6.25
Philadelphia	6.00 – 6.50	6.00 – 6.50
Baltimore	6.00 – 6.50	6.00 – 6.50
Norfolk	6.50 – 7.00	6.50 – 7.00
Wilmington, N. C.	6.50 – 7.00	6.50 – 7.00
Charleston, S. C.	6.50 – 7.00	6.50 – 7.00
Savannah	6.50 – 7.00	6.50 – 7.00
Jacksonville	6.00 – 7.00	6.50 – 7.00
Portland	6.75 – 7.00	6.75 – 7.00
Boston	6.00 – 6.50	6.25 – 6.50
Providence	6.00 – 6.50	6.25 – 6.50

WATER WHITE KEROSINE

District:			
N. Y. harbor	4.75 – 5.00	Charleston	5.00–5.25
(b)N. Y. harbor	4.625– 4.875	Savannah	5.00–5.25
Philadelphia	4.75–5.00	Jacksonville	5.00–5.25
Baltimore	5.00–5.25	Portland	5.60
Norfolk	5.00–5.25	Boston	4.75 –5.00
Wilmington, N.C.	5.00–5.25	Providence	4.75 –5.00

(c)FUEL OILS

	N. Y. harb.	N. Y. harb. barges
No. 1	4.75 – 5.00	4.625– 4.875
Nos. 2-3	4.25	4.125
No. 4	4.00 – 4.25	3.875– 4.125
No. 5	(s)$1.15	.....
No. 6	$0.95	.....

	Phila. dist.	Balt. dist.
No. 1	4.75 – 5.00	5.00 – 5.25
Nos. 2-3	4.25	4.25
No. 4	4.00 – 4.25	4.00 – 4.25
No. 5	$1.15	$1.15
No. 6	$0.95	$0.95

	Bost. dist.	Prov. dist.
No. 1	4.75 – 5.00	4.75 – 5.00
Nos. 2-3	4.25 – 4.50	4.25 – 4.50
No. 4	4.125– 4.50	4.125– 4.50
No. 5	$1.25	$1.15
No. 6	$0.95	$0.95

District:	(d)Bunker C Fuel	(d)Diesel Oil
N. Y. harbor	(f)$0.95	(g)$1.75
Philadelphia	(f)$0.95	(g)$1.75
Baltimore	(f)$0.95	(g)$1.75
Norfolk	(e)$0.95	$1.75
Charleston	$0.90	$1.75
Savannah	(e)$0.90	$1.785
Jacksonville	(e)$0.90	$1.785
Tampa	(e)$0.85	$1.785
Portland	$1.05	$1.85
Boston	(f)$0.95	(g)$1.75
Providence	$0.95	$1.75

	Gas Oil 28-34 Gravity	Diesel Oil Shore Plants
N. Y. harbor	4.00 – 4.25	4.00 – 4.25
Philadelphia dist.	4.25	....
Baltimore dist.	4.25	....
Norfolk dist.	4.25	....
Savannah dist.	....	4.25
Jacksonville dist.	....	4.25

Pacific Export

(f) (Quotations are at seaboard, Los Angeles, in cargo lots, cents per gal., except where otherwise noted.)

Prices Effective	Jan. 23	Jan. 16
U. S. Motor, under 65 oct.	4.625– 4.75	4.625– 4.75
400 e.p. blend, under 65 oct.	4.75 – 4.875	4.75 – 4.875
400 e.p. blend 65 oct & above	4.875– 5.00	4.875– 5.00
(h) 38-40 gravity, w.w. kerosine	4.25 – 4.75	4.25 – 4.75
41-43 gravity, w.w. kerosine	4.75 – 5.00	4.75 – 5.00
44 gravity, w.w. kerosine	5.25 – 5.50	5.25 – 5.50
In Cargo lots, per bbl.		
Diesel fuel, 24° & above	$1.05 – $1.20	$1.05 –$1.20
Diesel fuel, under 24°	$0.875–$1.05	$0.875–$1.05
(j) 30-34 gravity, diesel (gas oil)	$1.25 –$1.30	$1.25 –$1.30
(k)Grade C fuel oil	$0.60 –$0.70	$0.60 –$0.70

Prices Effective	Jan. 23	Jan. 16
In Ships' Bunkers, or deep tank lots, per bbl.:		
(j)Diesel fuel oil	$1.35 –$1.55	$1.35 –$1.55
(k)Grade C fuel oil	$0.70 –$0.90	$0.70 –$0.90
Cased Goods: (Per case)		
U. S. Motor	$1.40 –$1.50	$1.40 –$1.50
400 e.p. blend, under 65 octane	$1.50 –$1.60	$1.50 –$1.60
375–400 e.p. blend, 65 oct. & above	$1.60 –$1.70	$1.60 –$1.70
(h) 40-43 gravity, w.w. kerosine	$1.30 –$1.40	$1.30 –$1.40
Kerosine, p.w.	$1.25 –$1.35	$1.25 –$1.35

New York Export

(Cents per gal. in bbls. F.a.s. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:		
Light, 25 p.t.	21.00 –21.50	21.50
Neutral oil:		
200 3 color, 25 p.t.	22.50	22.50
150 3 color, 25 p.t.	20.50	20.50
600 s.r., unfiltered	15.00 –15.50	15.50
650 s.r., unfiltered	16.00 –16.50	16.50
600 fl., s.r.	17.50	17.50
630 fl., s.r.	20.50	20.50

Wax, Domestic *and* Export

(A.S.T.M. Tests. Melting points, however, are A.M.P., 3° higher than E.M.P. Export prices, f.a.s., carloads. Domestic prices, f.o.b. refineries in New Orleans & New York districts in bags, carloads, with 0.2c discount allowed for shipment in bulk, except where noted below. Scale solid; fully refined, slabs in bags)

Prices Effective	Jan. 23	
	New York	
	Domestic	Export
124-6 Y.C. scale	2.40 – 2.50	2.40 – 2.50
122-4 W.C. scale	2.40 – 2.50	2.40 – 2.50
124-6 W.C. scale	2.40 – 2.50	2.40 – 2.50
123-5 Fully rfd.	3.75	3.375
125-7 Fully rfd.	3.90	3.50 – 3.625
128-30 Fully rfd.	(l)4.00	3.65 – 3.75
130-2 Fully rfd.	(l)4.35	4.00
133-5 Fully rfd.	(l)4.65	4.40 – 4.50
135-7 Fully rfd.	(l)4.90	5.00 – 5.125
	New Orleans	
	Domestic	Export
124-6 Y.C. scale	2.40 – 2.50	2.40 – 2.50
122-4 W.C. scale	2.30 – 2.50	2.30 – 2.50
124-6 W.C. scale	2.40 – 2.50	2.40 – 2.50
123-5 Fully rfd.	3.75	3.375
125-7 Fully rfd.	3.90	3.50 – 3.625
128-30 Fully rfd.	(l)4.00	3.65 – 3.75
130-2 Fully rfd.	(l)4.35	4.00
133-5 Fully rfd.	(l)4.65	4.40 – 4.50

Gulf Coast

(F.o.b. ship, Gulf oil terminals; minimum 20,000 bbls.; representing traders' opinions)

Prices Effective	Jan. 23	Jan. 16
For Domestic shipment:		
MOTOR GASOLINE		
59 oct. & below	4.375– 4.50	4.375– 4.50
60-64 oct.	4.375– 4.625	4.375– 4.625
65-67 octane	4.50 – 4.875	4.50 – 4.875
68-70 octane	4.875– 5.125	4.875– 5.125
FUEL OILS		
No. 1	3.625– 4.00	3.625– 4.00
No. 2	3.375– 3.625	3.375– 3.625
KEROSINE		
41-43 gravity, w.w.	3.875– 4.125	3.875– 4.125

For Export Shipment:	Jan. 23	Jan. 16
GASOLINE		
U. S. Motor Gasoline, no octane guarantee	(a)4.25	(a)4.25

Gasoline:	Jan. 23 60-62 Gravity, 400 e.p.	61-63 Gravity, 390 e.p.	64-66 Gravity, 375 e.p.
60 octane	4.375– 4.50	4.375– 4.50	4.375– 4.50
61 octane	4.375– 4.55	4.375– 4.55	4.375– 4.55
62 octane	4.375– 4.60	4.375– 4.60	4.375– 4.60
63 octane	4.375– 4.65	4.375– 4.65	4.375– 4.65
64 octane	4.375– 4.70	4.375– 4.70	4.375– 4.70
65 octane	4.50 – 4.75	4.50 – 4.75	4.625– 4.75
66 octane	4.625– 4.875	4.625– 4.875	4.625– 4.875
67 octane	4.625– 5.00	4.625– 5.00	4.625– 5.00
68 octane	4.875– 5.125	4.875– 5.125	4.875– 5.125
69 octane	(n)	(n)	(n)
70 octane	5.00–5.50	5.00 – 5.50	5.00 – 5.50
71 octane	(n)	(n)	(n)

Prices Effective	Jan. 23	Jan. 16
For Export Shipment:		
KEROSINE		
44 gravity, w.w.	(a) 4.125–4.25	(a) 4.125–4.25
41-43 gravity, w.w.	3.875– 4.125	3.875– 4.125
41-43 gravity, p.w.	3.875– 4.125	3.875– 4.125
GAS AND BUNKER OILS		
For Export Shipment		
Gas Oil (m):		
Below 43 diesel index	3.375– 3.50	3.375– 3.50
43-47 diesel index	3.50 – 3.625	3.50 – 3.625
48-52 diesel index	3.50 – 3.625	3.50 – 3.625
53-57 diesel index	3.625– 3.75	3.625– 3.75
58 & above	3.625– 3.875	3.625– 3.875
For Domestic or Export Shipment		
Diesel Oil Ship's bkrs.	(o)$1.55	(o)$1.55
Grade C bunker oil for ship's bunkers	(o)$0.75	(o)$0.75
Grade C bunker oil, in cargoes	$0.675–$0.70	$0.675–$0.70

MID-CONTINENT LUBRICATING OILS

(Cents per gal. at Gulf; in bbls., f.a.s.; n bulk, f.o.b terminals)

	Jan. 23	
	(p)Barrels	Bulk
190-200 vis. D. 210 brt. stock	21.50 –22.50	17.60 –17.80
150-160 vis. D 210 brt. stock:		
0-10 p.p.	18.00 –18.25	13.00 –14.30
10-25 p.p.	17.50 –17.75	12.50 –14.25
150-160 vis. E 210 brt. stock	17.25 –17.50	13.00 –14.50
120 vis. D 210 brt. stock	17.25 –17.50	13.00 –14.50

	Jan. 23	Jan. 16
180 vis. No. 3 color neutral:	Bulk	Bulk
0-10 p.p.	9.80 –10.50	9.80 –10.50
15-30 p.p.	9.50 –10.00	9.50 –10.00
200 vis. No. 3 color neutral:		
0-10 p.p.	10.30 –10.50	10.30 –10.50
15-30 p.p.	9.50 –10.00	9.50 –10.00
600 s.r. olive green	9.00 –11.25	9.00 –11.25
600 s.r. dark green	7.00 – 9.25	7.00 – 9.25

SOUTH TEXAS LUBRICATING OILS

(Vis. at 100° cold test 0, bulk export shipment, f.o.b. terminals.)

Unfiltered Pale Oils:

Vis.	Color		
100	No. 3	4.50 – 4.75	4.50 – 4.75
200	No. 3	6.00 – 6.25	6.00 – 6.25
300	No. 3	6.50 – 6.75	6.50 – 6.75
500	No. 3½	7.50	7.50
750	No. 4	8.00 – 8.25	8.00 – 8.25
1200	No. 4	8.375– 8.75	8.375– 8.75
2000	No. 4	8.50 – 9.00	8.50 – 9.00

Red Oils:

Vis.	Color		
100	No. 5-6	4.50 – 4.75	4.50 – 4.75
200	No. 5-6	6.00 – 6.25	6.00 – 6.25
300	No. 5-6	6.50 – 6.75	6.50 – 6.75
500	No. 5-6	7.50	7.50
750	No. 5-6	8.00 – 8.25	8.00 – 8.25
1200	No. 5-6	8.375– 8.75	8.375– 8.75
2000	No. 5-6	8.50 – 9.00	8.50 – 9.00

Note: Red oil prices cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate freight rates to Continental ports shillings per ton of 2240 lbs., British sterling: U. S. ports cents per bbl.)

Rates Effective Jan. 23

	Crude & /or Fuel		Refined Oil & /or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont.(q)	10/6	10/3-10/9	10/9	10/3-11
Aruba-U.K./Cont.(q)	9/	9/-9/6	10/	9/3-9/6
Gulf-N. Atlantic (r) (not E. of N.Y.): Hvy. Crude & fuel, (10 to 19.9 gravity)	21c	21c	....	....
Light Crude, (30 Grav. or Lighter)	19c	18-19c	....	....
Gasoline	....	....	27.5c	20-21c
Kerosine	....	....	28.5c	21-22c
Light Fuel	....	....	29.5c	22-23c

(a) Prices nominal. (b) In barge lots. (c) Fuel oils meet specifications of U. S. Commercial Standards CS12-35. (d) In ships' bunkers. (e) For barging, add 5c per bbl. (f) For barging, add 5c to 6c per bbl. (g) For barging, add 6.5c to 7.5c per bbl. (h) 150 fire point. (i) For San Francisco cargo prices, add 5c per bbl. to cargo prices shown above. (j) Pacific Specification 200. (k) Pacific Specification 400. (l) Shipment either in bags or in bulk. (m) Less than ½ of 1% sulfur. (n) No prices reported. (o) Barging 5c per bbl. additional at some Gulf ports. (p) Second-hand barrels. (q) Continental ports in range between Bordeaux and Hamburg, both inclusive. (r) Venezuela loading, same rate; Tampico, 2c to 3c per bbl. additional. (s) Low pour test, low viscosity, No. 5 generally quoted at $1.25.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN FIELDS

Posted by Joseph Seep Purchasing Agency
(Effective Jan. 21, 1939, except Corning Oct. 18, 1938)

Penna. Grade Oil in Southwest Penna. Pipe Lines.....$1.43
Penna Grade Oil in Eureka Pipe Lines (West Virginia).....$1.37
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.).....$1.30
Corning Oil in Buckeye Pipe Lines (Ohio)..$0.97

Posted by Other Companies

Tide Water Associated Oil Co.
Bradford-Allegany district (Penna. and N. Y.) (Effective Sept. 1, 1938).....$1.80
*The Pennzoil Co.: (Effective Sept. 1, 1938)
Penna. Grade Oil in National Transit Lines *1.73
*The Pennzoil Co. posts $1.73 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields, prices in other lower districts range down to $1.68 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co.
Midland, Midland County (Oct. 14, 1938)...$0.925

Posted by Simrall Corp.
(Effective Jan. 6, 1939)
Crystal, Greendale, Porter and equal grades..$0.925
Beaverton, Buckeye, Bentley, Edenville....$0.90
Freeman.....$0.82
(Effective Dec. 13, 1938)
West Branch, Arenac, and equal grades....$0.70

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.
(Effective Oct. 13, 1938)
Illinois and Princeton.....$1.05
Illinois Basin.....$1.15
Owensboro, (Western Ky.).....$1.10
Lima, O.....$0.90

Posted by Sohio Corp.
Illinois Basin:
Beecher City (Effective Oct. 13, 1938).....$1.15
Centralia Field:
Congested District (Effective Oct. 1, 1938).$1.15
Area Outside Congested District (Effective Oct. 13, 1938).....$1.15

Posted by Carter Oil Co.
(Effective Oct. 14, 1938)
Louden, Fayette County, Ill.....$1.15

Posted by Ashland Oil & Transportation Co.
(Effective Oct. 14, 1938)
Somerset Oil in Ashland Lines, Kentucky:
Big Sandy River.....$1.12
Kentucky River.....$1.20

Posted by Stoll Oil Refining Co.
(Effective Nov. 10, 1938)
Stoll Pipe Line Oil (Ky.).....$1.00

Posted by Fordsville Gathering Line, Inc.
(Effective Dec. 24, 1938)
Birk City Field Ky.....$1.05
(Effective Oct. 13, 1938)
Owensboro District, Ky..... 1.10

CANADIAN FIELDS

Posted by Imperial Oil Limited
Western Ontario
(Effective Oct. 25, 1938)
Petrolia.....$1.90
Oil Springs.....$1.97

Alberta—Turner Valley
(Prices f.o.b. field tankage)
(Effective Jan. 5, 1938)

Crude Oil

40-40.9°.....	$1.14	53-53.9.....	$1.40
41-41.9.....	1.16	54-54.9.....	1.42
42-42.9.....	1.18	55-55.9.....	1.44
43-43.9.....	1.20	56-56.9.....	1.46
44-44.9.....	1.22	57-57.9.....	1.48
45-45.9.....	1.24	58-58.9.....	1.50
46-46.9.....	1.26	59-59.9.....	1.52
47-47.9.....	1.28	60-60.9.....	1.54
48-48.9.....	1.30	61-61.9.....	1.56
49-49.9.....	1.32	62-62.9.....	1.58
50-50.9.....	1.34	63-63.9.....	1.60
51-51.9.....	1.36	64-64.9.....	1.62
52-52.9.....	1.38		

Crude Naphtha, 65 grav. & above.....$2.14

Absorption Gasoline
90% Rec., 20 lb. Reid v.p.....$1.94
90% Rec., 17 lb. Reid v.p.....$2.08

MID-CONTINENT

Oklahoma-Kansas
*(Effective Oct. 11 to 22, 1938)

	S. O. Indiana	Carter Magnolia Sinclair Shell	Continental Texas Co.
Below 21°.	$0.70	$0.60	....
21-21.9....	.72	.63	....
22-22.9....	.74	.66	....
23-23.9....	.76	.69	....
24-24.9....	.78	.72	....
25-25.9....	.80	.75	....
26-26.9....	.82	.78	....
27-27.9....	.84	.81	....
28-28.9....	.86	.84	$0.86
29-29.9....	.88	.87	.88
30-30.9....	.90	.90	.90
31-31.9....	.92	.92	.92
32-32.9....	.94	.94	.94
33-33.9....	.96	.96	.96
34-34.9....	.98	.98	.98
35-35.9....	1.00	1.00	1.00
36-36.9....	1.02	1.02	1.02
37-37.9....	1.04	1.04	1.04
38-38.9....	1.06	1.06	1.06
39-39.9....	1.08	1.08	1.08
40 & above	1.10	1.10	1.10

*Effective by Carter Oil, Oct. 13, posting in Okla. only; Continental Oil, Oct. 11, with lowest grade below 29; Magnolia, Oct. 12, posting in Okla. only; Shell, Oct. 22; Sinclair-Prairie, Oct. 14, with lowest grade 21-21.9; S. O. Indiana, Oct. 17; The Texas Co., Oct. 12.

North-North Central and Central Texas

*Effective 1938:	Stanolind Oct. 17	Sinclair-Prairie Oct. 11	*Texas Co. *Continental *Magnolia
Below 21°.	$0.60	....	....
21-21.9....	.62	....	....
22-22.9....	.64	....	....
23-23.9....	.66	....	....
24-24.9....	.68	$0.76	$0.79
25-25.9....	.70	for	for
26-26.9....	.72	oil	oil
27-27.9....	.74	below	below
28-28.9....	.76	29°.	29°.
29-29.9....	.78	.78	.81
30-30.9....	.80	.80	.83
31-31.9....	.82	.82	.85
32-32.9....	.84	.84	.87
33-33.9....	.86	.86	.89
34-34.9....	.88	.88	.91
35-35.9....	.90	.90	.93
36-36.9....	.92	.92	.95
37-37.9....	.94	.94	.97
38-38.9....	.96	.96	.99
39-39.9....	.98	.98	1.01
40 & above.	1.00	1.00	1.03

*Effective Oct. 11, by Continental, in North Tex.; Oct. 12, by Texas Co. in North & North Central Texas. Texas Co.'s lowest grade is 28-28.9, at $0.79; by Magnolia, Dec. 3, in N. and N. Central Texas

Jefferson County, Texas

Posted by Magnolia Petroleum Co.

Beaumont

(Effective Oct. 12, 1938)

Below 20°.....	$0.79	30-30.9.....	$1.08
20-20.9.....	0.82	31-31.9.....	1.10
21-21.9.....	0.85	32-32.9.....	1.12
22-22.9.....	0.88	33-33.9.....	1.14
23-23.9.....	0.91	34-34.9.....	1.16
24-24.9.....	0.94	35-35.9.....	1.18
25-25.9.....	0.97	36-36.9.....	1.20
26-26.9.....	1.00	37-37.9.....	1.22
27-27.9.....	1.02	38-38.9.....	1.24
28-28.9.....	1.04	39-39.9.....	1.26
29-29.9.....	1.06	40 & above	1.28

*For below 21°.

Oct. 11, '38, Stanolind Oil & Gas Co. posted same gravity and price schedule in West Beaumont field as Magnolia.

TEXAS FIELDS

Posted by Humble Oil & Refining Co.

*(*West Central Texas)*
(Effective Dec. 3, 1938)

24-24.9.....	$0.71	33-33.9.....	$0.89
25-25.9.....	.73	34-34.9.....	.91
26-26.9.....	.75	35-35.9.....	.93
27-27.9.....	.77	36-36.9.....	.95
28-28.9.....	.79	37-37.9.....	.97
29-29.9.....	.81	38-38.9.....	.99
30-30.9.....	.83	39-39.9.....	1.01
31-31.9.....	.85	40 & above.....	1.03
32-32.9.....	.87		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young counties.

Note: Effective Oct. 1 1937, Humble prices are based on 100% tank tables at 60F.

**East Central Texas*
(Effective Oct. 11, 1938)

23-23.9.....	$0.78	32-32.9.....	$ .96
24-24.9.....	.80	33-33.9.....	.98
25-25.9.....	.82	34-34.9.....	1.00
26-26.9.....	.84	35-35.9.....	1.02
27-27.9.....	.86	36-36.9.....	1.04
28-28.9.....	.88	37-37.9.....	1.06
29-29.9.....	.90	38-38.9.....	1.08
30-30.9.....	.92	39-39.9.....	1.10
31-31.9.....	.94	40 and above....	1.12

*Including Anderson, Cherokee, Limestone, Navarro counties.

PANHANDLE TEXAS

Posted by Humble Oil & Refining Co.
(Effective Dec. 3, 1938)

	Gray County	Carson-Hutchinson
28-28.9.....	0.72	$0.67
29-29.9.....	0.74	0.69
30-30.9.....	0.76	0.71
31-31.9.....	0.78	0.73
32-32.9.....	0.80	0.75
33-33.9.....	0.82	0.77
34-34.9.....	0.84	0.79
35-35.9.....	0.86	0.81
36-36.9.....	0.88	0.83
37-37.9.....	0.90	0.85
38-38.9.....	0.92	0.87
39-39.9.....	0.94	0.89
40 & above.....	0.96	0.91

Effective Dec. 3, 1938, above Panhandle prices met by Magnolia.

EAST TEXAS

(Effective *Oct. 11, 12, 13, 1938)
Gulf, Humble, Magnolia, Stanolind, Texas Co., Tide-Water Associated.....$1.10
*Effective Oct. 11 by Humble and Stanolind; Oct. 12 Magnolia, Texas, Tide Water; Oct. 13 by Gulf.

Shell also posted on Oct. 11, 1938, in Livingston area, Polk County, Texas, $1.10.

NORTHEAST TEXAS

(Posted by Humble, Oct. 11, 1938)
Talco.....$0.55

(Posted by Magnolia, Oct. 12, 1938)
Cass County and Panola County, Tex.:
Same gravity and price schedule as S. O. Louisiana posts for N. La.-Ark. Crude, which see under that company.

(Posted by The Texas Co., Oct. 12, 1938)
Cass County.....$1.05

WEST TEXAS AND NEW MEXICO

Posted by Humble Oil & Refining Co.
(Effective Oct. 11. 1938)

(Including Andrews, Crane, Crockett, Ector, *Gaines, Glasscock, Howard, *Reagan, Upton, Winkler and *Yoakum Counties, Texas and Lea county, New Mexico).

Below 20.....	$0.53	30-30.9.....	$0.75
20-20.9.....	.55	31-31.9.....	.77
21-21.9.....	.57	32-32.9.....	.79
22-22.9.....	.59	33-33.9.....	.81
23-23.9.....	.61	34-34.9.....	.83
24-24.9.....	.63	35-35.9.....	.85
25-25.9.....	.65	36-36.9.....	.87
26-26.9.....	.67	37-37.9.....	.89
27-27.9.....	.69	38-38.9.....	.91
28-28.9.....	.71	39-39.9.....	.93
29-29.9.....	.73	40 & above.....	.95

Pecos, West Texas.....$0.78

*Added to this posting, Aug. 29, 1938.

Oct. 12, '38, Magnolia met Humble in Crane, Glasscock, Howard, Mitchell, Upton and Winkler counties, except that its lowest grade is below 25 at $0.63.

Oct. 11, '38, Shell Petroleum met Humble in Crane, Ector, Glasscock, Howard, Upton and Winkler counties, Tex., and Lea county, N. M., except that its highest grade is 36 & above, at $0.87. It met Humble in Pecos, and in Pecos county Yates shallow pool, posted $0.65.

Oct. 11, '38, Stanolind Oil & Gas Co. met Humble in Hendrick field, Winkler, except that its lowest grade is below 26 at $0.65.

Oct. 12, '38, The Texas Co. posted in Ward and Winkler counties, Tex., and Lea county, N. M., same prices as Humble in West Texas, except that its lowest grade is below 26, at $0.65, and its highest grade, 36 and above, at $0.87.

Posted by Continental Oil Co.
(Effective Oct. 11, 1938)

Artesia, Jackson and Maljamar pools, New Mexico: gravity schedule beginning with below 29, at $0.61; 29-29.9, at $0.63; plus 2c differential for each gravity, up to 40 & above, at $0.85.

COLORADO

Posted by Continental Oil Co.
(Effective Oct. 11. 1938)
Ft. Collins and Wellington

Below 29.....	$0.81	35-35.9.....	$0.95
29-29.9.....	.83	36-36.9.....	.97
30-30.9.....	.85	37-37.9.....	.99
31-31.9.....	.87	38-38.9.....	1.01
32-32.9.....	.89	39-39.9.....	1.03
33-33.9.....	.91	40 & above.....	1.05
34-34.9.....	.93		

Canon City and Florence, Col.....$0.90

SOUTH AND SOUTHWEST TEXAS

All Shown Below Posted by Humble Oil & Refining Co.
(Effective Oct. 11, 1938)

Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoboroski crudes.....$0.96
Van crude.....$0.93
Conroe.....$1.27

(Effective Dec. 3, 1938)

Flour Bluff.....$1.23

Oct. 12, '38, Magnolia met Humble in Darst Creek; posted $0.87 in Luling; $0.99 in Lytton Springs; $1.14 for Cleveland, and $1.02 in Hardin, both in Liberty county, Tex.

Oct. 12, '38, The Texas Co. met Humble in Darst Creek.

**Anahuac and Dickinson*
(Effective Dec. 3, 1938)

Below 20°.....	$0.74	30-30.9.....	$1.03
20-20.9.....	.77	31-31.9.....	1.05
21-21.9.....	.80	32-32.9.....	1.07
22-22.9.....	.83	33-33.9.....	1.09
23-23.9.....	.86	34-34.9.....	1.11
24-24.9.....	.89	35-35.9.....	1.13
25-25.9.....	.92	36-36.9.....	1.15
26-26.9.....	.95	37-37.9.....	1.17
27-27.9.....	.97	38-38.9.....	1.19
28-28.9.....	.99	39-39.9.....	1.21
29-29.9.....	1.01	40 & above.....	1.23

*Includes Cedar Point, Fairbanks, Gillock, Hull, Pierce Junction and Raccoon Bend (shallow sand).

Raccoon Bend (Deep sand crude) Tomball and Satsuma
(Effective Dec. 3, 1938)

22-22.9.....	$0.95	32-32.9.....	$1.15
23-23.9.....	.97	33-33.9.....	1.17
24-24.9.....	.99	34-34.9.....	1.19
25-25.9.....	1.01	35-35.9.....	1.21
26-26.9.....	1.03	36-36.9.....	1.23
27-27.9.....	1.05	37-37.9.....	1.25
28-28.9.....	1.07	38-38.9.....	1.27
29-29.9.....	1.09	39-39.9.....	1.29
30-30.9.....	1.11	40 & above.....	1.31
31-31.9.....	1.13		

Dec. 3, Magnolia met above price and gravity schedule in Tomball.

(Continued on next page)

CRUDE OIL MARKETS

(*Continued from preceding page*)

Posted by Humble

**Mirando*

(Effective Dec. 3, 1938)

Below 20°.....	$0.74	30-30.9.....	$1.03
20-20.9.....	.77	31-31.9.....	1.05
21-21.9.....	.80	32-32.9.....	1.07
22-22.9.....	.83	33-33.9.....	1.09
23-23.9.....	.86	34-34.9.....	1.11
24-24.9.....	.89	35-35.9.....	1.13
25-25.9.....	.92	36-36.9.....	1.15
26-26.9.....	.95	37-37.9.....	1.17
27-27.9.....	.97	38-38.9.....	1.19
28-28.9.....	.99	39-39.9.....	1.21
29-29.9.....	1.01	40 & above.....	1.23

*Includes Duval, Jim Hogg, Jim Wells, Webb and Zapata counties, Tex. and Heyser and Placedo crudes.

Oct. 12, '38, Texas Co. posted for Duval-Mirando, $0.77 for below 21, plus 3c differential to 26-26.9, $0.95; 27-27.9, $0.97; 28 & above, $0.99.

Dec. 3, Humble's Mirando schedule met by Magnolia.

LOUISIANA-ARKANSAS

Posted by Standard Oil Co. of Louisiana

(Effective Oct. 5 1938)

	*N. La.-Ark.	†Columbia County, Ark.	‡South Louisiana
Below 21°.	$0.73	$0.66	$0.74
21-21.9....	for	for	.77
22-22.9....	oil	oil	.80
23-23.9....	Below	Below	.83
24-24.9....	25°	25°	.86
25-25.9....	$0.75	$0.68	.89
26-26.9....	.77	.70	.92
27-27.9....	.79	.72	.94
28-28.9....	.81	.74	.96
29-29.9....	.83	.76	.98
30-30.9....	.85	.78	1.00
31-31.9....	.87	.80	1.02
32-32.9....	.89	.82	1.04
33-33.9....	.91	.84	1.06
34-34.9....	.93	.86	1.08
35-35.9....	.95	.88	1.10
36-36.9....	.97	.90	1.12
37-37.9....	.99	.92	1.14
38-38.9....	1.01	.94	1.16
39-39.9....	1.03	.96	1.18
40 & above.	1.05	.98	1.20

(Effective Oct. 5, 1938)

Smackover, Ark.....$0.73
Urania, La. (Ark. Fuel Oil Co., Jan. 28, '37)..$1.02

*Includes Bunkie, Caddo, Carterville, DeSoto, Homer, Haynesville, Rodessa, Sabine and Sarepta, in N. La.; El Dorado and Miller County, Ark. (latter is Ark. part of Rodessa field).

Note: S. O. Louisiana prices in all La.-Ark. fields, effective Oct. 5, 1938, are on 100% tank table basis.

†Includes Buckner, Magnolia, and Village pools.

‡Includes these fields: Baton Rouge, Bayou, Choctaw, Cheneyville, Darrow, Jeanerette, Lirette, N. Crowley and Roanoke.

Posted by Continental Oil Co.

(Effective Oct. 11, 1938)

Tepetate and Ville Platte, La.....$1.03

(Effective Jan. 1, 1939)

Abbeville, La.

Below 36.....	$0.92	38-38.9.....	$0.98
36-36.9.....	.94	39-39.9.....	1.00
37-37.9.....	.96	40 & above.....	1.02

Oct. 12, 1938, Magnolia Petroleum and The Texas Co. posted same gravity and price schedule as S. O. La. posts in N. La.-Ark. in these fields: Magnolia, in Bull Bayou, Cotton Valley, Haynesville, Pine Island, and Rodessa, La., and Eldorado and Rainbow, Ark.; Texas Co. in N. La. Both also met S. O. La. in Smackover. Texas Co. posted $1.24 for Garden Island, La. and $1.04 for Lafitte, La.

*GULF COASTAL FIELDS

Posted by Humble Oil & Refining Co.

†(Effective Oct. 11, 1938)

Below 20.....$0.79		30-30.9.....$1.08	
20-20.9.....	.82	31-31.9.....	1.10
21-21.9.....	.85	32-32.9.....	1.12
22-22.9.....	.88	33-33.9.....	1.14
23-23.9.....	.91	34-34.9.....	1.16
24-24.9.....	.94	35-35.9.....	1.18
25-25.9.....	.97	36-36.9.....	1.20
26-26.9.....	1.00	37-37.9.....	1.22
27-27.9.....	1.02	38-38.9.....	1.24
28-28.9.....	1.04	39-39.9.....	1.26
29-29.9.....	1.06	40 & above.....	1.28

†Effective Dec. 3, 1938, gravities up to 45 & above discontinued in Refugio, Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

*Humble's prices apply in these Texas fields: Amelia, Clear Lake, Goose Creek, Mykawa, Sugarland, Thompsons, Webster and West Columbia; also Refugio, Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

Oct. 11, 1938, Stanolind posted in Clinton, Hastings, High Island, So. Houston, and Spindletop, same prices as Humble in Texas Gulf Coast fields, except that Stanolind's lowest grade is below 21, at $0.82.

Oct. 12, 1938, The Texas Co. posted for Texas & La. Gulf Coast crude: $0.82 for below 21, plus 3c to 26-26.9, which is $1; from there on, 2c, to 34 & above, which is $1.16. In Refugio, same as other Gulf Coast, except highest gravity is 28 & above, $1.04.

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co.

(Effective Oct. 11, 1938)

Salt Creek, (except Tensleep crude), Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma-Kansas, ranging from $0.86 to $1.10, which see under Mid-Continent crude on previous page.

Tensleep, Salt Creek field	$0.646
Iles, light, Col.	0.98
Iles, heavy	0.92
Elk Basin, light	0.90
Grass Creek, light	0.90
Frannie light	0.55
Grass Creek, heavy	0.40
Hamilton Dome, Wyo	0.35
Frannie heavy	0.42

Posted by Ohio Oil Co.

(Effective Oct. 11, 1938)

Elk Basin, Wyo.	$0.90
Grass Creek, light	0.90
Rock Creek	1.00
Lance Creek	0.77
Dry Creek, Mont.	0.92

(Effective May 1, 1938)

Grass Creek heavy.....$0.50

(Effective Nov. 16, 1937)

Sunburst, Mont.....$0.90

Posted by Continental Oil Co.

(Effective Oct. 11, 1938)

Cat Creek, Mont.	$1.10
Big Muddy, Wyo.	0.98
Lance Creek, Wyo.	0.77

CALIFORNIA, *Posted by Standard Oil of California*

All gravities above those quoted take highest price offered in the field. Prices effective Feb. 26, 1936, except Huntington Beach, Playa del Rey, Santa Fe Springs, Kern Front, Signal Hill (Long Beach) effective March 7, 1936; Elk Hills effective June 22, 1936; Lakeview Area, Aug. 19, 1936; El Segundo and Wilmington, Oct. 15, 1937; Greeley-Canal, July 9, 1938; Santa Maria Valley, by Union Oil, Oct. 15, 1938.

Gravity	Signal Hill (Long Beach) El Segundo †Wilmington	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda Brea Canon	Athens Rosecrans	Dominguez	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	‡Newhall and others	Mountain View	Elk Hills	Buena Vista Hills Midway-Sunset Lakeview Area	Greeley-Canal (Kern County)	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria (Union Oil)
13-13.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.63
14-14.9.	$0.80	$0.79	$0.74	$0.78	$0.79	$0.80	$0.76	....	....	$0.80	$0.76	$0.76	$0.77	$0.78	....	$0.70	....	$0.70	$0.70	....	$0 0	$0.70	....	.65
15-15.9.	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	70	.70	....	.68
16-16.9.	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.70
17-17.9.	.80	.79	.74	.78	.81	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.70
18-18.9.	.80	.79	.74	.78	.84	.80	.78	....	....	.82	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	....
19-19.9.	.82	.79	.74	.82	.87	.84	.81	....	....	.85	.76	.78	.77	.78	....	.70	.70	.74	.74	....	.74	.71	.70	....
20-20.9.	.85	.79	.74	.85	.90	.88	.84	....	....	.88	.78	.82	.77	.80	....	....	.70	.78	.78	....	.78	.72	.70	....
21-21.9.	.88	.79	.74	.89	.93	.93	.88	....	....	.91	.80	.85	.77	.84	.78	....	.73	.82	.82	....	.82	.74	.70	....
22-22.9.	.92	.82	.74	.92	.96	.98	.92	....	....	.93	.84	.89	.79	.88	.78	....	.77	.87	.87	....	.86	.78	.72	....
23-23.9.	.95	.86	.77	.96	.99	1.02	.96	.84	.79	.96	.88	.93	.82	.92	.78	....	.80	.92	.92	....	.90	.82	.76	....
24-24.9.	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	.99	.91	.96	.85	.96	.82	....	.84	.97	.97	....	.94	.86	.79	....
25-25.9.	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	1.02	.95	....	.89	.99	.86	....	.88	1.01	1.01	....	.98	.90	.83	....
26-26.9.	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	1.05	.98	....	.92	1.03	.90	....	.91	1.06	1.06	....	1.02	....	....	....
27-27.9.	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	1.02	....	.96	1.06	.95	....	.95	1.10	1.10	$0.91	1.06	....	....	....
28-28.9.	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	1.06	....	.99	1.10	.99	....	.99	1.15	1.15	.94	1.10	....	....	....
29-29.9.	1.17	1.15	.93	1.18	1.18	....	1.17	1.12	.93	....	1.09	....	1.03	1.14	1.03	....	1.02	1.20	1.20	.98	1.14	....	....	....
30-30.9.	1.21	1.19	.95	1.22	1.21	....	1.21	1.17	.95	....	....	....	1.07	1.17	1.08	....	1.06	1.25	1.25	1.02	1.18	....	....	....
31-31.9.				....	1.24		1.24	1.22	.97	....	....	....	1.11	1.21	1.12	....	1.09	1.29	1.29	1.06				....
32-32.9.		*Elwood Terrace		....	1.27		1.27	1.27	1.00	....	....	....	1.14	1.25	1.16	....	1.13	1.34	1.34	1.09	Kettleman Hills			....
33-33.9.	....	1.28	....	....	....		....	1.32	....	....	....	....	1.18	1.28	1.20	....	1.17	1.38	1.38	1.13	....	1.19	....	....
34-34.9.	....	1.32	....	....	....		....	1.37	....	....	....	....	1.22	1.32	1.25	....	1.20	....	....	1.17	....	1.23	....	....
35-35.9.	....	1.35	....	....	....		....	1.42	....	....	....	....	1.25	....	1.29	....	....	....	....	1.20	....	1.27	....	....
36-36.9.	....	1.39	....	....	....		....	1.46	....	....	....	....	1.29	....	1.33	....	....	....	....	1.24	....	1.31	....	....
37-37.9.	....	1.43	....	....	....		....	1.51	....	....	....	....	1.32	....	1.37	....	....	....	....	1.28	....	1.35	....	....
38-38.9.	....	....	....	....	....		....	1.56	....	....	....	....	1.36	....	1.42	....	....	....	....	1.31	....	1.39	....	....
39-39.9.	....	....	....	....	....	F. O. B. Standard Pipe Line	....	1.61	....	....	....	....	1.40	....	....	....	....	....	....	1.35	....	1.43	....	....
40-40.9.	....	....	....	....	....		....	1.66	....	....	....	....	1.43	....	....	....	....	....	....	1.39	....	....	....	....
41-41.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	....	....
42-42.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.46	....	....	....	....
43-43.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.50	....	....	....	....
44-44.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.54	....	....	....	....
45-45.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.57	....	....	....	....
46-46.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.61	....	....	....	....
47-47.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.65	....	....	....	....
48-48.9.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.68	....	....	....	....

*F. o. b. ship.
‡Also McKittrick, Kern River. Kern Front and Round Mountain $0.70 thru 19.9 gravity; no higher gravity quoted.
†Wilmington prices differ on gravities below 18.9. Prices are: 14-16.9, $0.75; 17-17.9, $0.77; and 18-18.9, $0.79; rest of schedule same as Signal Hill.

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New Jersey Oil Men Plan 1939 Meetings

NEWARK, N. J.—The New Jersey Oil Trade Assn. has decided upon the following social functions for the ensuing year: Spring Frolic, March 9, Robert Treat Hotel, Newark; Golf Outing, Elizabeth Suburban Club, June 6; Fall Outing, place undecided, Sept. 28; Annual Meeting, Robert Treat Hotel, Newark, Dec. 7.

Monthly luncheon meetings of the officers and board of directors will be held at noon in the Robert Treat Hotel as follows: Feb. 14; March 13; April 10; May 8.

Skyrocket Skelly Sales!

Skelly's Stamp Album Offer Writes Radio History With Record-Breaking Response

Skelly has scored again! Captain Midnight, Skelly's spectacularly successful radio adventure program, has set another amazing record. With each succeeding offer drawing greater numbers than the one before . . . with a constantly growing audience now running into staggering figures as evidenced by actual enrollment of more than 650,000 in Captain Midnight's Flight Patrol . . . this radio feature is bringing business to Skelly Service Stations in unprecedented volume.

The rich and colorful appeal of the Air Hero Stamp Album illustrated here is typical of the material offered in connection with the Captain Midnight program. The results speak for themselves. Listen to Captain Midnight yourself, from the nearest of its numerous station outlets. Presented every week-day evening, Monday through Friday. To get the whole story of what this program means to Skelly jobbers and dealers, write or wire your nearest Skelly office today.

Comments that tell us
CAPTAIN MIDNIGHT IS
"DEALERS' CHOICE"
All Over
THE SKELLY
TERRITORY

"Sure Fire"
"Swell"
"Really Great"
"The Berries"
"A Knock-Out"
"Grand"
"A Gold Mine"

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J. C. Hunter

The new president of the Mid-Continent Oil & Gas Association is a native Texan who has been an independent oil producer since 1926. He was school teacher, county treasurer and county judge and banker before entering the oil business. He now lives in Abilene and has several oil interests as well as connections with other lines of business. He was recently president of the West-Central Texas Oil & Gas Association and has taken an active part in oil industry association activities in general.